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MIT Sloan Management Review

TECH AT THE EDGE

EVALUATING THE POTENTIAL OF EMERGING TOOLS

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Into the Fray

With all of the escalating challenges confronting business leaders today, it's not surprising that some established businesses are choosing to retrench and trying to operate in ways that have worked for them in the past. Everyone back in the office. Top-down management. A singular focus on the bottom line and hitting those quarterly targets.

The way to maintain equilibrium while moving forward through turbulence is not to stand fixed and rigid but to adapt and adjust while keeping sight of and rallying the team around the organization's greater purpose. Leading today is more challenging, more nuanced, and more rewarding than ever.

Organizational structure is one area that is ripe for adaptation. In "Rethinking Hierarchy," Nicolai J. Foss and Peter G. Klein argue that managerial authority and hierarchy are still necessary for large organizations to operate effectively but they must be aligned to each company's specific needs. It's not about dictating what people do but creating the frameworks within which they make decisions, operate, and work together — "designing and enforcing the rules of the game rather than making everyone play it in a certain way." Foss and Klein offer guidance on how to approach this design challenge based on your own organization's needs.

Employee well-being has become an urgent priority for many business leaders, as illness and burnout from stress reach epidemic proportions. One area of organizational structure that is getting in the way is the historical division between talent and benefits groups within human resources. In "Reimagining HR for Better Well-Being and Performance," authors Gabriella Rosen Kellerman and Martin Seligman show how these two teams can together provide effective interventions to support employee mental health so that workers can thrive.

For organizations as a whole to thrive now and in the years ahead, they need to innovate. The importance of psychological safety is well established as a precondition to high job performance and innovation. But unless psychological safety is balanced by an openness to intellectual honesty and debate, a company will struggle to achieve breakthrough innovation, argue Jeff Dyer, Nathan Furr, Curtis Lefrandt, and Taeya Howell in "Why Innovation Depends on Intellectual Honesty." The authors define four innovation cultures based on the degree to which these two conditions exist. Overemphasize intellectual honesty without regard to psychological safety, and you might achieve breakthroughs, but you'll also create an anxious culture, exacerbating stress and burnout. Overemphasize psychological safety at the expense of intellectual honesty, and the culture will be comfortable but breakthroughs unlikely. Companies that bring the two together benefit from both incremental and breakthrough innovations and create a culture where people are more likely to thrive and learn.

Leading an organization through today's turbulence isn't easy, at any level of management. But these are just the kinds of challenges readers of *MIT Sloan Management Review* relish. Columnist Sanyin Siang leaves us with a final heartening thought: Whatever issues you tackle during your tenure, you have the opportunity to cultivate a legacy that transcends discrete initiatives and the current balance sheet. You can shape the culture of your team or organization into something wonderful that endures.

Abbie Lundberg // @abbielundberg
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MIT Sloan Management Review

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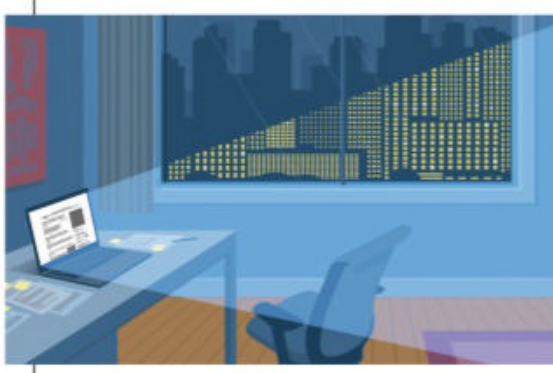

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REVENUE MODELS

New Threats to the Subscription Model

Inflation and supply chain disruption might make it harder for businesses to meet their obligations to customers on subscription plans.

By Oded Koenigsberg

Subscriptions have all the hallmarks of a can't-miss revenue model. Customers love how they lower their barriers to access, while companies embrace their simplicity and ease of communication. Investors prize them because they generate more predictable long-term revenue flows than conventional one-off transaction models.

Proponents of the so-called subscription economy — a term coined by the CEO of platform provider Zuora — argue that customers are better served by subscription experiences built around services than by static offerings or a single product. Software giant SAP asserts that a subscription model shortens time to market and speeds delivery of services to customers, in addition to accelerating cash collection and enabling businesses to define and modify pricing models.[1]

Daniel Zender / theispot.com

Two unanticipated risks, however, currently threaten to undermine these vendor advantages as well as the premise that subscriptions offer a better customer experience. These risks are supply chain disruption and inflation, the two most persistent causes of economic uncertainty over the past two years. Their combined effects are confronting many managers of subscription-based businesses with a challenge that never seriously crossed their minds during the relative stability of the 2010s: Can we still afford to meet the obligations we've made to our customers?

Subscription Models at Risk

Supply chain disruptions — such as delayed shipment of inputs and finished goods, as well as ongoing

labor shortages — mean that what a company promises its subscribers today might no longer be available at the same level of quality next week or next month. This creates the potential for dissatisfied customers, exacerbating a more fundamental risk in the subscription model: the ease with which customers can cancel. The same low barriers to entry that make subscriptions accessible also make them easily interchangeable.

The threat of inflation, meanwhile, is particularly acute for companies with a large base of long-term subscribers or for companies that deliver physical products under a subscription plan.

Inflation squeezes margins because costs are rising, but the amount of revenue that companies earn from each customer remains constant until customers renew. In some cases, these rising costs expose incompatibility between a company's cost structure and its subscription model. Managers may be able to disregard this when subscriber growth is robust, but they can no longer ignore it when growth stalls or when it hinders their ability to meet demand.

Supply chain disruption and inflation create a perfect storm that can reduce customer satisfaction and prompt customers to seek alternatives. Companies that derive the bulk of their revenue from subscriptions need to assess their risk profile with respect to supply chain reliability, cost structure, inflation, and customer retention. Each area poses its own set of risks that can constrain or cripple a subscription model, even one that still has a very strong appeal to customers. Depending on that risk assessment, such companies may need to consider alternative revenue models that supplement or even replace subscriptions.

Can You Still Meet Customer Obligations?

Subscriptions represent a commitment that suppliers need to honor. In the software industry, Adobe succeeded in honoring its commitments when it shifted users to its Creative Cloud subscription software suite, by making more tools available to more users and by introducing updates much faster and with less friction.

But for many companies, the ability to provide a steady flow of goods and services is no longer guaranteed. Any subscription service based on the availability of physical goods — whether diapers, printer ink, or an automobile (in the case of mobility services) — depends on the consistent availability of products that work and the means to deliver them. The products cannot be held up in ports, warehouses, service garages, or delivery trucks.

Network capacity — regardless of the type of good or service — has also become a constraint. To look at an extreme illustration of how this constraint works, imagine what would happen if the state of Texas offered a flat-rate subscription for unlimited access to electricity. The system would quickly collapse, because demand would outstrip the network's ability to serve it. The utility could expand the network, but that would lead to a significant step change in fixed costs and would also take too long to address supply-and-demand imbalances in the short term. Such network effects can affect streaming services, mobile telephony, and software applications — essentially any business that currently offers unlimited access at a fixed price.

Cost structure incompatibility may pose the greatest risk to a company's ability to meet its obligations to subscribers. It's also hard to detect, because it usually becomes apparent only when companies become victims of their own success. Let's take a streaming service such as Netflix as an example.

When one incremental subscriber watches an episode of an original program such as *Ozark* or *Stranger Things*, the marginal cost of that incremental viewer is effectively zero. But what happens when that subscriber finishes streaming those two popular series? They want to stream something else. The marginal cost of one piece of incremental new content for that viewer is not zero. That's where the problems start.

The more subscribers Netflix acquires, and the more content those subscribers binge-watch, the more quality content Netflix needs to generate through licensing or its own investments in production. At the same time, the pool of available quality content and quality content producers is limited, making it harder and more costly to acquire an incremental piece of high-value content.

This means that the cost curve for this kind of service is convex: It increases as a function of volume, rather than decreasing. It's hard for a company to generate the revenue to fund those investments, because flat-rate subscriptions are essentially a mechanism for offering quantity discounts. The more someone streams, the less they pay per unit for the incremental show.

This issue is particularly problematic if companies are unable to allocate revenue to costs. They can't isolate the effect of making an incremental addition or subtraction and therefore can't determine how much variety is optimal. A reluctance to add cost creates a disincentive to invest in quality. A desire to cut costs creates an incentive to eliminate components of the subscription bundle based on how expensive they are, not the returns they generate.

The worst-case scenario occurs when these risks turn each advantage of the subscription model into a liability, because companies have limited leeway to manage costs without putting the quality of their offerings at risk. Predictability becomes inflexibility. Simplicity and ease of communication give way to complexity and a struggle to manage demand and customer satisfaction amid persistent uncertainty. Low entry barriers become low exit barriers for customers.

The Challenge of Customer Churn

Customer retention is one of the hardest and most important marketing challenges, given this ease of exit. Low prices per unit of time (whether weekly, monthly, or annual) offer customers affordable access

to goods and services, but they also lower the perceived risk of switching when the customer has alternatives. From a behavioral standpoint, factors that tend to encourage customers to stick with solutions after they have made purchases — the endowment effect and sunk cost fallacy, for example — are weak or nonexistent when customer outlays are much smaller, as they tend to be under a subscription model.

Some subscription models treat this as a tactical challenge of churn management and attempt to lock in customers by automatically renewing unless the customer proactively cancels. This approach depends in part on the belief that customers won't act when the cancellation deadline arrives, but customer inertia is sometimes too weak to reduce or discourage churn. A study conducted by researchers at the University of Chicago tested different subscription models for a media product and learned that "any short-term revenue gains that were due to the inertia of subscribers who were automatically enrolled were outweighed by the longer-term effect, as locked-in customers gradually left."[2] Finally, if competitors also offer subscriptions, customers can easily switch providers with minimal commitment to something new.

Other factors are subscription fatigue and subscription saturation. The term *great cancellation* has come into vogue in the U.K., referring not to the effects of censorship and cancel culture but rather to something more mundane: People feel they have more subscriptions than they need, including many that overlap, and have become more selective about what they sign up for.[3] One driver of this shift, besides subscription saturation, is inflation. A reduction in disposable income and the risk of persistent higher prices force consumers to become more cost-conscious.

How Managers Can Mitigate the Risks

Unless companies have established exit barriers through superior performance, upgrades, or attractive cross-selling, they face the risk of easy churn. There are both short- and longer-term solutions that managers can explore.

Network capacity — regardless of the type of good or service — has also become a constraint.

In the short term, one solution is to incentivize customers to consume less at constant prices. That is helpful if your business faces long or uncertain lead times, but this solution can also have unintended consequences: It can increase opportunity costs and also lead to lower customer satisfaction if the situation persists. In the short to medium term, companies can start to explore supplementary revenue models. Netflix, for example, has launched an ad-supported subscription plan to generate additional revenue.

The longer-term option for companies is to revisit and rethink the choice of a subscription revenue model strategically. As Marco Bertini and I explain in our book, *The Ends Game*, subscriptions are an excellent way to lower barriers to access. That helps explain why people have gym memberships instead of buying their own equipment and why people subscribe to Netflix or Spotify instead of buying downloads or songs.

But equal access does not mean equal consumption. That's why subscriptions can still be a poor proxy for the value a customer derives. The heavy user gets more bang for their buck at the gym but also consumes more resources than the occasional user. Equal access and equal consumption, in turn, do not mean equal outcomes. Is the customer who loses weight, improves their health, or runs a 5K for the first time deriving more value than someone who adds 20 pounds of muscle or someone who spends all of their gym time building flexibility on the Pilates machine?

The problem is that value is always personal, fluid, and hard to estimate at any given time. Revenue models reflect a company's best attempt to approximate that value for a large number of customers. Deciding what your model should be — ownership, subscriptions, usage, or performance — has two dimensions. The first is your own objectives. What customer behaviors are you trying to incentivize? What balance are you trying to achieve across customer acquisition, customer retention, revenue, and profit? How do these objectives and the potential models fit your capabilities, your cost structure, and your internal incentives? The second dimension considers value to your customers: What kinds of efficiencies or benefits do you want to help customers obtain?

Subscriptions are not always the best way to achieve your objectives or meet customer needs. Real-time information and communication technology offer businesses unprecedented insights at a very detailed level into how customers access and consume products and services. By measuring and understanding the misalignments and waste they have created in terms of access, consumption, and performance, companies now have the means and the motivation to overcome their own inertia and replace their proxies with new revenue models. Eliminating the waste and inefficiency in value capture is a transformative opportunity for companies, not just a means to establish or reinforce customer loyalty. ■

Oded Koenigsberg *is a professor of marketing at London Business School. He is coauthor (with Marco Bertini) of* The Ends Game: How Smart Companies Stop Selling Products and Start Delivering Value *(MIT Press, 2020).*

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NONCOMPETE AGREEMENTS

What an FTC Noncompete Ban Could Mean for Workers and Businesses

Research shows that noncompete agreements depress worker wages and mobility and make it harder for new businesses to start, scale, and hire talent. So why are they everywhere?

Evan Starr, interviewed by Kaushik Viswanath

In January, the U.S. Federal Trade Commission proposed a ban on noncompete clauses in employment contracts. In addition to barring new noncompete agreements with employees and independent contractors, the rule would require employers to rescind existing ones. To understand what a federal ban could mean for workers and businesses, why it's facing opposition, and how employers can prepare, we spoke with Evan Starr, an associate professor of management who studies noncompetes at the University of Maryland's Robert H. Smith School of Business.

This interview has been edited for length and clarity.

***MIT Sloan Management Review*: How widespread are noncompete clauses, and who is subject to them?**

Evan Starr: Surveys show that between 50% and 60% of firms use noncompetes for at least some workers, and about 30% of firms use them for all workers. An estimated 18% to 30% of workers are bound by noncompete agreements.

Executive roles are by far the most common place in which we see noncompete agreements. For other professionals, such as technical workers like engineers and doctors, it's around 50%. But you see them in every corner of the labor market. The typical worker bound by one is paid by the hour and makes at the median about $14 an hour. I've seen noncompete agreements in volunteer contracts and nonprofit organizations, too.

When and how did noncompetes become common in the U.S.?

Noncompete agreements date back to the 1400s, when master craftsmen would train apprentices, who signed agreements that they wouldn't become competitors. That eventually became English common law, which treated these on a case-by-case basis, balancing the need for this restriction against the harm that it did to a worker and society.

Most U.S. states followed this model, except California, Oklahoma, and North Dakota, all of which made noncompetes unenforceable in the late 1800s. Since then, there have been mostly tweaks across states until recently. In the past few years, there has been a raft of legislation aimed at reforming noncompete law at the state level, mostly to carve out low-wage workers who may be subject to these agreements.

Who counts as a low-wage worker is a mostly arbitrary distinction. Policy makers have taken enormously different approaches, banning noncompetes for workers making under $13 an hour to, recently in Washington, D.C., those making under $150,000 a year.

And what would you say has been the effect of these noncompete agreements on workers?

The best evidence we have comes from several natural experiments.

In 2008, Oregon became the first state to ban noncompete agreements for hourly workers and workers earning under the median income for a family of four. I have a paper on this, and we found that wages

Michael Austin / theispot.com

for hourly workers in Oregon were about 5% higher than for hourly workers in other states five years later, and their job mobility also increased about 11% over time. These laws don't have an immediate effect because they typically aren't retroactive; they apply only to new contracts.

Hawaii banned noncompetes in 2015 for tech workers only. That set up another natural experiment, allowing us to compare tech workers to other workers in Hawaii and tech workers in Hawaii to tech workers in other states. We found similar results: Wages among new hires grew about 4% and job mobility rose by about 11%.

Both cases suggest that these agreements hold workers' wages down and prevent them from taking better jobs.

Is there any research on how noncompetes affect employers?

There are several studies documenting that when noncompete agreements are enforced or are more likely to be enforced, we see reductions in entrepreneurship, particularly among women, and new firms tend to grow a little bit slower, as they likely have

trouble hiring.

There's a paper by Hyo Kang and Lee Fleming on a 1996 policy in Florida, which became the vanguard of noncompete enforcement. Its statute said that when the state considers enforcing a noncompete agreement, it won't consider the harm done to the worker. Kang and Fleming found that large firms benefited from that policy. Fewer small firms entered the state, and small firms made up a smaller share of employment. So it seems that noncompete agreements tend to benefit large incumbents over small firms and new entrants.

Do we know whether workers who are bound by noncompetes in one state move to another state to get out of them?

Absolutely. In the 1980s, Michigan changed its law to start enforcing noncompetes. Studies by Matt Marx et al. examined how policies like this cause workers to move across state lines. In particular, these studies found that the mobility of inventors in Michigan slowed relative to other states and that they were more likely to leave the state.

We have a follow-up paper that similarly found that in states that more vigorously enforced noncompete agreements, tech workers were more likely to leave the state for jobs elsewhere in the same industry.

What do you expect will be the effect of banning noncompetes at the federal level, as the FTC proposes?

The evidence suggests that workers will largely benefit by being able to take their skills to other employers and receive higher pay. Employers will benefit to the extent that they're able to hire workers they couldn't previously. Instead of having to hire, for example, a recent college grad who needs training, they may be able to hire somebody more senior. New businesses will be able to hire more easily.

It's harder to say what will happen to innovation at larger firms. These firms are concerned that workers might take trade secrets they spent a lot of money developing and go across the street and sell them to competitors or start competitors themselves. You might worry that this harms firms' incentives to develop these trade secrets.

But that argument may be somewhat overblown. The many companies founded in Silicon Valley had a lot of industry-specific knowledge, which generally would have been grounds to enforce noncompete agreements, but California's long-standing ban on them allowed founders to start new firms, hire workers, and share ideas. The Silicon Valley example counters the argument that you need to enforce noncompetes to have innovation. In fact, maybe what really spurs innovation is workers having incentives to develop valuable knowledge for themselves with the ability to exploit it, which is suggested in a recent paper by Zhaozhao He that the FTC relies on.

The second major reason I think the concern is overblown is that there are other tools firms have besides noncompetes, such as trade-secret laws, NDAs [nondisclosure agreements], and agreements not to solicit clients or coworkers.

Is there a concern that companies might invest less in training their employees if noncompetes are banned?

That's possible. One reason why firms invest in training is they're unable to hire experienced workers who are bound by noncompetes, so they have to hire workers from outside the industry and then train them. It's not clear what the optimal amount of training is, but the goal is not to maximize training expenditures. The goal is to maximize welfare. There's a reason we don't have patents last 100 years. You do want information to spill over to some extent.

Has the proliferation of noncompete agreements emerged as a kind of arms race, where one company might start putting these restrictions on their employees and so other companies in the industry would want to do the same in defense?

Absolutely. As soon as you try to hire from a competitor and get embroiled in a lawsuit over a noncompete agreement, or you get raided by a competitor, you realize that if you're not using noncompetes already, you ought to think about it. There's an article by Ronald Gilson published in *New York University Law Review* in 1999 that basically says that while it's privately optimal for every firm to use noncompete agreements, if every firm does this, then you're going to get a stagnant labor market where nobody's moving, ideas are not flowing, new firms are not being formed, and there's less competition, which is not good for workers or consumers.

Gilson argues that this is a prisoner's dilemma, in which everyone is doing the thing that is privately optimal but it's not socially optimal. So unless there is a ban on noncompete agreements, firms are going to engage in this behavior.

While so much of the evidence points toward the benefits of banning noncompete agreements, there is still some resistance to the notion of banning them at the federal level. The U.S. Chamber of Commerce said it would fight such a ban in court. What's the rationale behind the opposition?

There are two reasons I see. One is that noncompetes have been under state purview for some 200 years, so states are not going to want their authority usurped. But while it might seem like a federal ban is overturning precedent, the FTC could have regulated noncompete agreements after they came into being in 1914. For whatever reason, it left it to the states until now.

One of the challenges with states setting their own policies here is that if you're a multistate employer, it is difficult to navigate all these state laws with different exclusions for noncompete agreements. For workers, if you move across state lines, how do you know which state's law is going to apply? There is value to uniformity. Whether the FTC is the right vehicle for that uniformity is a different question.

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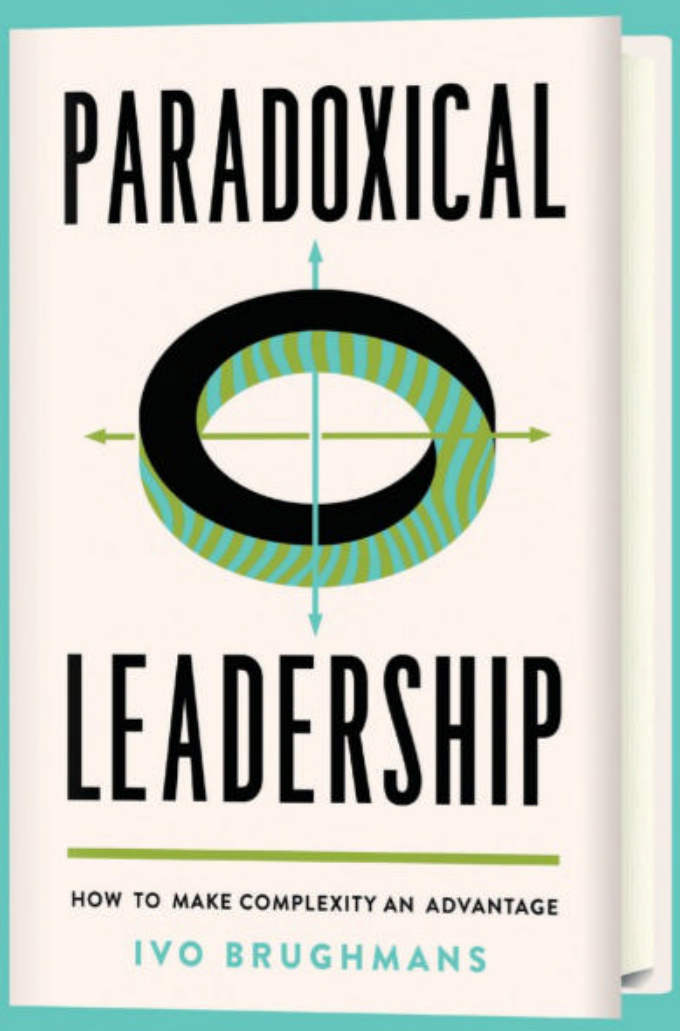

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The second point is that the other tools firms have to protect their legitimate interests are harder to enforce. To enforce an NDA, for example, you need to prove in court that somebody violated the terms of the NDA, which can be difficult if that person was secretive. In contrast, it's easy to prove that somebody violated a noncompete agreement. You just observe that they went from firm A to firm B.

What measures should companies be taking ahead of an expected ban on noncompete agreements? Do you have any suggestions?

One suggestion is that if you're using noncompete agreements for every worker at your firm — and we know a lot of firms do this — then revisit that, because the FTC is probably going to ban them for at least some workers.

The ban as currently proposed will apply to all workers. But there is a push to carve out high-wage workers. In that case, start thinking about your low-wage workers and figure out which ones don't need to have a noncompete agreement, because then you're more likely to be compliant with any particular ban.

If this ban comes into play, the other thing to start thinking about is, who are those workers who would be great fits at your firm? If you're a startup or a firm with a new idea but you currently can't hire people with the expertise you need because they're bound by noncompetes, you may want to start identifying the workers you might want to try to hire once this ban comes into effect. ■

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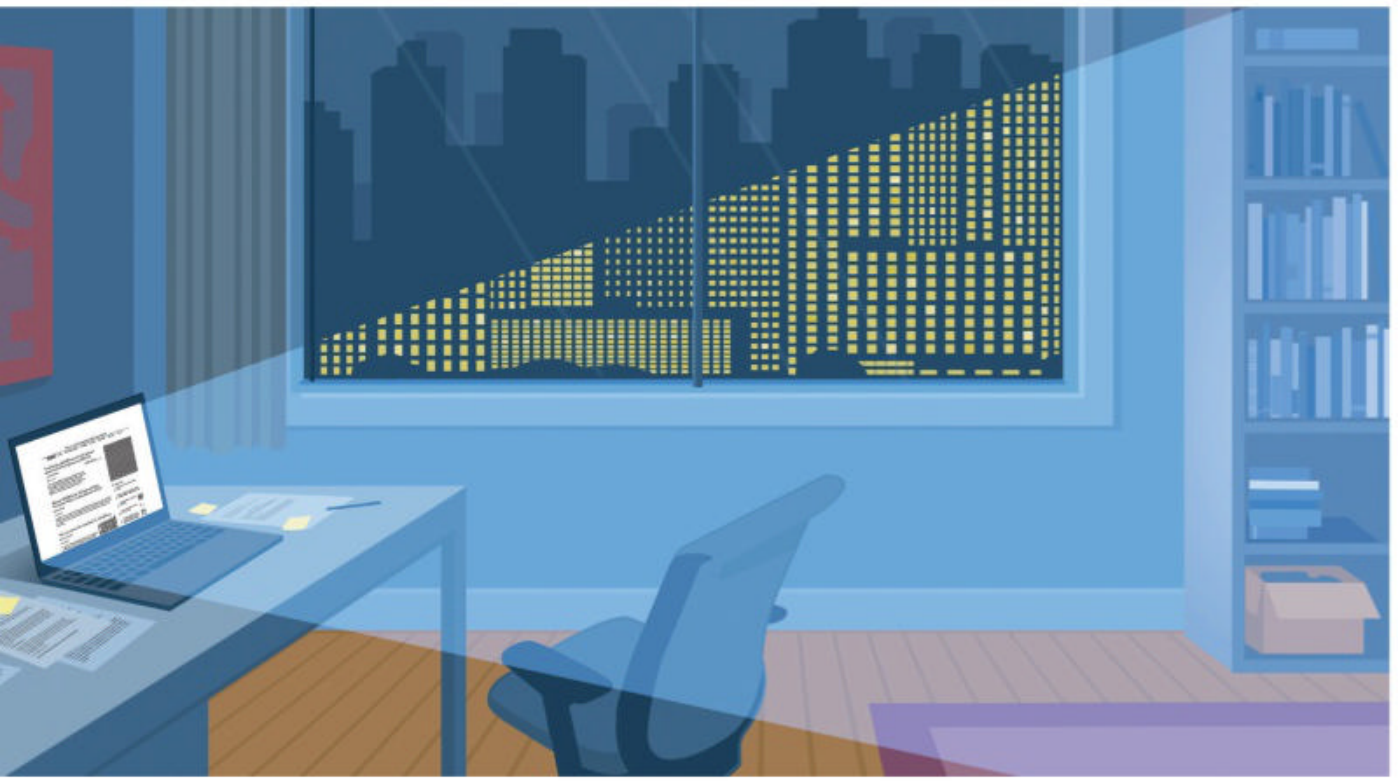

REMOTE WORK

Work-From-Home Regulations Are Coming. Companies Aren't Ready.

The growing compliance costs of remote work could push more employers to bring workers back to the office.

By Jimena Murillo Chávarro

Debates over the trade-offs of remote work arrangements have tended to focus on challenges related to maintaining worker productivity, building company culture, and upholding boundaries between work and home. Now, employers are faced with an additional challenge: complying with a growing set of regulatory frameworks governing remote work.

For most workers, working from home was once a seasonal perk or a special arrangement their employer offered. Now, what started as an emergency response to the COVID-19 pandemic has become routine. Between 2019 and 2021, the number of people working primarily from home increased from 5.7% to 17.95% of all workers in the United States and from 14.6% to 24.4% in Europe.

With new data showing that remote work could save companies up to $10,600 per employee annually, and major employers such as 3M, SAP, and Spotify committing to making remote work programs permanent, the trend looks like it's here to stay.

But the increased flexibility and cost savings of remote work also mean that employers no longer have the kind of control over the safety and stability of their employees' work environments that they used to. Employees also might find it harder to separate their work and personal lives. These issues have prompted a surge in new regulatory developments aimed at making sure remote workers, home workers, and teleworkers are protected under existing environmental, health, and safety legislation and guidelines and that employers are not running afoul of labor laws.

Flexible Working Modalities: One Concept, Many Dimensions

The growing web of regulatory minutiae governing flexible working arrangements around the world poses an acute challenge for multinationals. These companies must now contend with different compliance requirements in different jurisdictions, depending on how governments define and interpret terms like *remote work*, *teleworking*, and *work from home*. For example, in Spain, remote work is defined as a work activity that is performed either at the worker's home or at another place of their choice at least 30% of the time over a period of three months. Teleworking is a subcategory of remote work that requires the job to be carried out through telecommunications systems. All of this is mapped out in detail in Spain's Law 10/2021 on remote work. Among employer requirements is a written agreement for all teleworking employees that includes the worker's detailed schedule, place of work, and how the company will monitor their work-related activities. Fines for noncompliance can run from 70 euros for minor infractions to upward of 225,000 euros for major lapses in compliance.

Similarly, Germany introduced draft legislation in January 2021 that makes clear distinctions between mobile work, which is any work that uses information technology that is performed outside of the business premises, and telework, which is defined as work that is exclusively and permanently performed at the employee's home. Details of the pending Mobile Work Act that are still being finalized include an extension of work accident insurance to cover the home offices of employees, and the implementation of a recording system to ensure that employees don't work beyond a maximum number of hours.

The phenomenon is truly global in nature. It's playing out in Latin America with three distinct regulations for teleworking, working from home, and remote work in Colombia, and a new law on teleworking in Peru. In the Asia-Pacific region,

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the Philippines introduced revisions to its Telecommuting Act that include specific requirements for businesses working in the IT sector and in certain economic zones.

Even in the U.S., which has not seen any direct legislation governing flexible working arrangements since the Telework Enhancement Act of 2010, a number of local laws affecting practices such as interstate taxation and expense reimbursement have emerged, creating complicated compliance challenges. For example, laws referred to as the *convenience of the employer rule* that are currently on the books in just five states — Connecticut, Delaware, Nebraska, New York, and Pennsylvania — allow state tax authorities to impose an income tax on wages earned for an employer based in that state, even if the employee is based outside the state. Likewise, several states require companies to pay for expenses that employees incur while working from home.

The Right to Disconnect

On top of the growing list of local laws affecting work occurring outside a traditional office, the remote work phenomenon has also given birth to new legislative proposals limiting work hours. This right to disconnect has become a big issue in the European Union, which is seeking to formalize employees' rights to disengage from work and refrain from work-related electronic communications during nonwork hours.

Some EU states have laws setting such limits, such as in France, where the labor code requires all companies with 50 employees or more to reach an agreement with workers' representatives that regulates the use of digital devices during rest and leave periods. There are similar laws in Italy and Spain, but the idea of an EU-wide directive aimed at formally limiting the always-on culture of the contemporary workplace introduces a host of new complexities for employers. Among them: the need to be able to monitor and measure the working time of remote employees, the development of written contracts outlining workers' rights, and the alignment of compensation for any work done outside prescribed working hours.

In Latin America, the right to disconnect has been evolving alongside regulations on flexible working. For instance, Uruguay's teleworking law requires employers and teleworkers to agree on a disconnection schedule that must be included in the working contract. Similarly, Argentina, Chile, and Peru guarantee teleworkers' right to disconnect. In 2022, Colombia adopted a law on the right to disconnect that applies to all working modalities. And in Canada, the province of Ontario requires employers to have a written policy on employee disconnection.

Companies Face Pressure

Most companies are not set up for this level of remote work management, and many are starting to face legal challenges. A class-action lawsuit introduced in 2021 in California alleges that a multinational bank failed to reimburse business expenses incurred by customer service employees working from home during the COVID-19 pandemic and misclassified the individuals as exempt from overtime wages and meal and rest breaks. In Europe, a Dutch court recently ruled that an employee was wrongfully terminated for refusing to keep his webcam turned on for several hours a day. This past December, in a potentially precedent-setting case in Germany, a court ruled that when a remote-working employee slipped on his way from his bed to his home office, it qualified as a workplace accident.

All of this means that allowing large numbers of employees to work from anywhere is starting to get a lot more complicated. Employers may need to keep closer track of individual work hours and stay on top of the detailed definitions of remote work, work from home, or teleworking in every jurisdiction where employees are located, and to cross-reference applicable federal, state, and local tax laws.

Employers that embraced the remote work revolution understood how it could help them stay resilient, nurture their top talent, and save some money on commercial real estate. Unfortunately, mistakes in how they manage remote employees could undo a lot of that goodwill, creating bad optics and exposing them to significant financial penalties along the way.

Will these increased risks and potential liabilities offset the advantages of remote work in the eyes of large corporations? That will depend on the employer. Recently, as the economy has begun to slow and public health measures have been lifted, many employers have started to reverse course on their remote work policies, citing improved productivity and collaboration in an in-office environment. Employers that want to get their employees back into the office could start pointing to the growing costs of complying with remote work regulations as another reason to go back to the old way of doing things. Meanwhile, many other employers have doubled down on remote work, insisting that it is the way of the future and using flexible work structures as a strategic recruiting tool.

No matter where your company falls on the remote work debate, the devil is in the details when it comes to achieving the desired outcome. If you're going to have employees working outside the office, you'll need to scrutinize the jurisdictional nuances in every market. As the boundaries continue to blur between work and home life, employers that offer flexible working arrangements as a perk need to take proactive measures to ensure that they are indeed creating a safe and healthy environment for employees — and that they have the concrete evidence of those measures when potential problems arise. ■

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STRATEGIC COMMUNICATIONS

The PR Power of Fessing Up

Companies are adopting a new communications strategy: publicly disclosing unflattering information about lapses and misdeeds. New research indicates that doing so is effective for building trust.

By Sarah A. Soule and Lambert Zixin Li

Many leaders are spending an increasingly large share of their time worrying about their organization's reputation. Companies are under closer scrutiny than ever from employees, shareholders, unions, the media, and activists, who are ready to pass judgment on corporate actions and impacts, especially regarding societal and environmental issues. This has left some leaders struggling to figure out how to build and maintain a positive reputation in the eyes of their key stakeholders.

In a world where social media in particular rapidly fuels narratives that organizations can't control, it can be hard to believe that at one time, businesses could simply release some positive information about themselves to distract stakeholders from negative news. This was once a standard public relations practice, and even fairly recently some companies have continued to make pro-social claims in response to unflattering revelations about their business activities.

Today, this smoke-and-mirrors strategy is no longer viable, since negative information is now easier to share and discover than it used to be. As a result, organizations are more likely to treat the discovery of negative information as they would treat any other type of crisis: They apologize, ideally immediately and transparently, and promise to make amends.

Both of these strategies are reactive — and companies with a more sophisticated approach to communication have figured out that a proactive approach is far more effective for reputation management. Many companies, for example, forge partnerships with unions and nongovernmental, philanthropic, pro-social, or activist organizations. While they may do so to learn from these organizations, most also hope to gain stakeholder trust by association.

More recently, businesses have begun to engage in what has been called strategic silence, which is when an organization engages in socially responsible behavior or philanthropy without disclosing it. The literature on strategic silence shows that they do this to avoid potential allegations of hypocrisy: Social-impact watchdogs are savvy, and when they see an organization touting its good deeds, they often look under the hood to see whether its behavior is in fact consistent with what it espouses.

Our latest research has uncovered yet another reputation management strategy: the confession. In the wake of the massive wave of Black Lives Matter protests after the murder of George Floyd in 2020, as well as increasing scrutiny of organizational practices with respect to race, organizations began to adopt a new, proactive strategy for managing their reputations: They began to confess their sins.

Coca-Cola took this approach, issuing a statement that, in part, said that "corporate America hasn't made enough progress and nor has The Coca-Cola Company." It confessed to mistakes, including those that led to what it called "the largest discrimination lawsuit in U.S. history in 1999/2000." The statement continued, "As the judge said, our biggest issue was not that we made

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mistakes and that there were individual cases, but that when we knew, we didn't act to remedy and improve."

The confession strategy has also been used by B Corporations, such as Patagonia, which said, "The Black Lives Matter movement has forced a reckoning of the deep racial injustice around us and laid bare our complicity. ... We are a white-led outdoor company reliant on recreation on stolen Native lands that are not yet safe for all. ... We must confront Patagonia's lack of progress and take full ownership of the legacy of our failures."

The strategy has been used by nonprofits as well. For example, a report Harvard University released on its historic ties to slavery acknowledged that "Harvard leaders, faculty, staff, and benefactors enslaved people, some of whom labored at the university; accrued wealth through the slave trade and slave labor; and defended the institution of slavery."

Importantly, in almost all cases, the organizations had not been recently accused of poor practices with respect to race. However, the events of 2020 shone a light on the effects of systemic racism in the U.S. and other countries. This not only nudged organizational leaders to look inward at their own practices; it also raised the concern that the general public might assume that they were part of the problem of institutional racism.

How a Confession Affects Public Perception

We initially discovered this novel confession strategy in 2020, when, following the outcry over Floyd's murder, we employed a research team to search for public statements related to racism, racial inequality, and the Black Lives Matter movement from every member of the Fortune 500 and all Certified B Corporations listed on B Lab's website. We found that 46% of Fortune 500 companies and 21% of B Corps issued some kind of statement addressing these topics. The 525 statements we collected included letters to employees that were subsequently posted online, and open letters to customers and clients.

As we read these statements, we were struck by how many of them — 42% — included some kind of confession. We identified two types of confession: Some companies confessed to actions that were counter to the goals of racial equity, while others confessed to a lack of awareness about the extent of racial inequity. We dubbed these *confessions of commission* and *confessions of omission*, respectively.

Having uncovered this new approach to managing organizational reputation during a period of increased public scrutiny, we wondered what effect it would have on public perceptions. Would it lead people to view a company as more socially responsible?

To investigate this question, we conducted an online survey with 1,046 participants who were representative of the U.S. population with respect to age, gender, racial and ethnic identity, income, and education. We recruited these participants from Prolific Academic, an academic research platform maintained by the Oxford Centre for Innovation. To reduce selection bias, we advertised the study with a generic description asking people to read an advertisement and answer a survey. We paid participants $9 per hour as an incentive effort and included only participants who passed several attention checks. We also measured the participants' political ideology: About half identified as liberal and half as conservative.

Each participant was asked to read one of the 525 racial equity statements, of which 42% contained a confession and 58% did not. The statements were randomly assigned to the participants so that nearly all of them were rated, including those that did not include a confession. Participants were then asked to give their opinion on the organization's degree of corporate social responsibility (CSR) using a 7-point scale.

We found that companies received a higher rating for social responsibility when their statements contained either type of confession rather than no confession at all. In fact, our study showed that the presence of a confession in a racial equity statement *nearly doubles* the perception that the organization is socially responsible.

What about confessions of omission versus commission? When the statement contains no confession, the mean CSR rating is 2.4 on a 7-point scale, compared with 5.4 (a 125% increase) when the statement contains a confession of omission. When a statement contains a confession of commission, the mean CSR rating is 6.3 (a 162.5% increase), demonstrating an even more pronounced effect.

We must caution that this data came from a survey, thus we did not control for other aspects of the statements. While we did control for various characteristics of the companies, it could be that the statements containing confessions also signal a greater commitment to CSR in other ways. We are currently working on controlled experiments to see whether we can isolate the same effect.

OUR WORK SUGGESTS THAT FOR COMpanies that wish to build or maintain a positive reputation for social responsibility, this new, proactive approach is more effective than the reactive strategies of simply apologizing or just releasing positive information. Like the proactive strategies of forging partnerships with NGOs and employing strategic silence, the confession prioritizes building trust with stakeholders. It makes a company appear honest and more authentic. By confessing, companies admit to the worst but demonstrate transparency and explain how they plan to do better — in the process, bolstering that most valuable and fragile of reputational commodities, trust. ■

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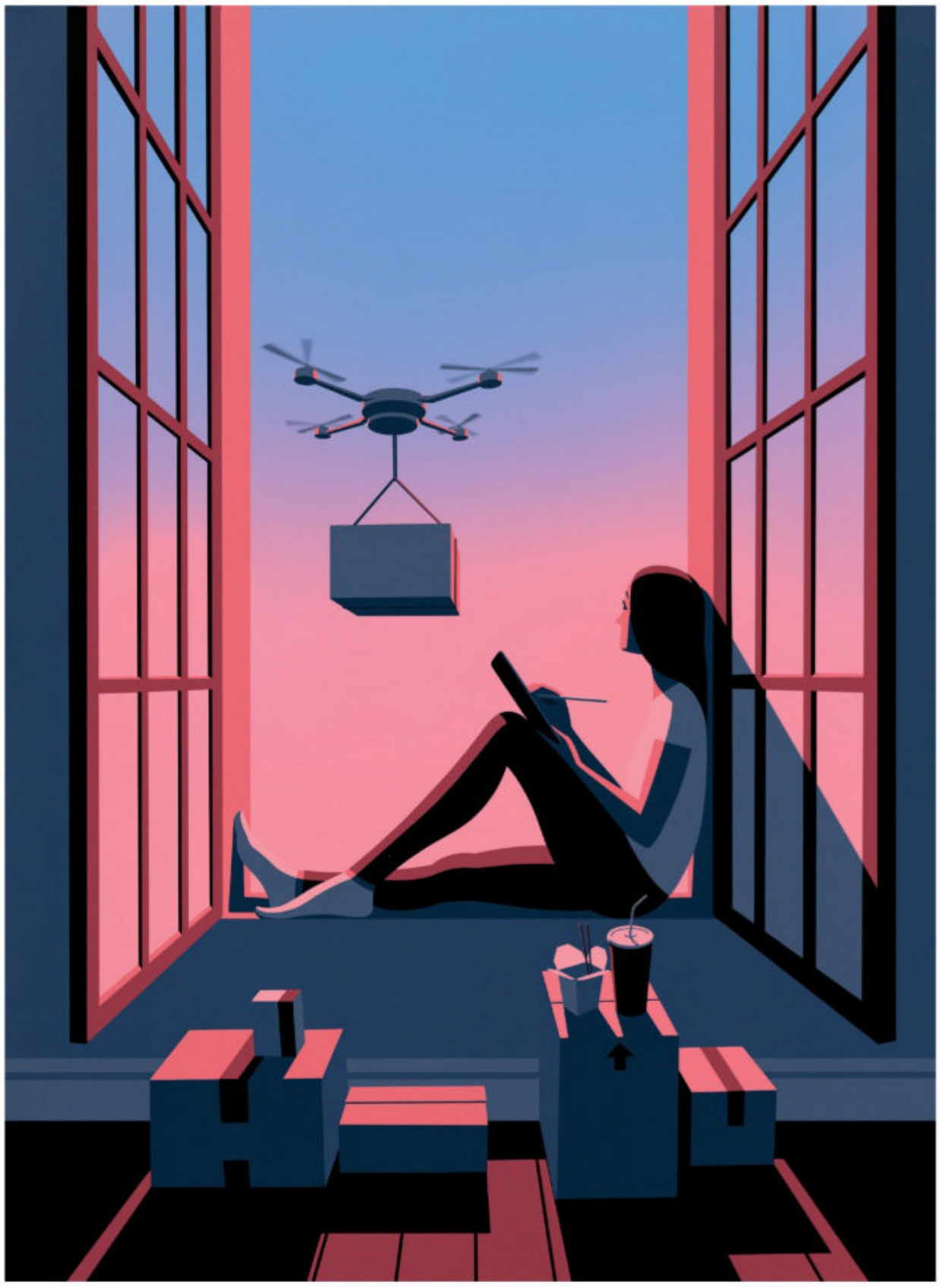

CUSTOMER INTELLIGENCE

How E-Commerce Companies Can Reduce Returns

Research shows that product returns decrease when online shoppers receive orders in a single, consolidated delivery.

By Pedro Amorim, Eduard Calvo, and Laura Wagner

Retail executives love the lack of friction in online shopping that makes it fast and easy for customers to complete a purchase, and promising free returns is part of that. But the costs of those returns add up: Of the approximately $1.29 trillion in U.S. online retail sales in 2022, it's estimated that $212 billion worth of goods — 16.4% of sales — were sent back. While that represents a reprieve for retailers from 2021, when the rate shot up to 20%, returns are up still significantly, from just 10.6% in 2020. It's putting e-commerce executives under pressure to lower these unsustainable numbers.

The managers we work with on fulfillment strategies keep coming back to two less-obvious, intertwined questions regarding product returns: Does the current common strategy of putting the lion's share of resources toward speedy delivery affect the return rate? And could a fulfillment approach that deprioritizes speed and instead aims to consolidate multiple-item orders into single, large deliveries improve return rates?

The issue matters not only to those invested in lowering reverse-logistics costs but also to colleagues in sales and marketing, since sales figures can oscillate dramatically as return rates and refunds are factored in.

Research we've conducted to answer these questions could challenge the assumptions underlying online delivery practices that, often counterintuitively, lead to higher rates of returns. We found that delivering all products in an order together, even if that means later delivery for some items, lowers the probability of returns. Our results suggest that delivery speed matters less to customers than the convenience of receiving all ordered items in a single delivery.

In this article, we'll look more closely at our findings and at what might drive customers to keep more purchases when deliveries are consolidated. We'll also offer suggestions for adapting fulfillment strategies to these findings.

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Better Together

In a typical e-commerce scenario, the seller seeks to expedite items in an order. It might ship items from different stock locations; for example, a dress from last season might ship from an offline store that still has one on its clearance rack, while other items might come from the seller's main distribution center. A customer might receive the items shipped from the distribution center within 48 hours but will have to wait one more day for the dress to arrive in a separate package.

Today's online retailers have a tremendous amount of data that can yield important insights about customer delivery preferences. To assess how online customers value trade-offs between speed and consolidation, we analyzed the behavior of online customers of a fashion marketplace across hundreds of thousands of purchasing instances. In each case, we investigated what the customer ordered, whether delivery was consolidated or split, and whether items were returned.

Analyzing customers' return rates for the marketplace, we found that the company would benefit significantly if the items were delivered in consolidated shipments instead of split — even if some things were to arrive later. The estimates for our case study show that consolidating all split orders would have decreased the marketplace's return rate by about 1 percentage point.

Moreover, when more customers retained their goods, thereby lowering reverse logistics costs, we saw improvements in the order net value, of 1.23 percentage points, for the marketplace we partnered with. Ultimately, this translated into an increase in the contribution margin per order of 0.29 points.

While these findings emerged from shoppers focused on fashion, they are likely applicable to other online retailers from which customers typically buy multiple items at once, such as sellers of furniture, home goods, appliances, and other durable goods. Moreover, our approach of using past fulfillment data to understand customers' online delivery preferences is relevant to any retailer on the verge of rethinking its fulfillment strategy.

Need for Closure

Our findings are counterintuitive for most retail managers, who typically prioritize speedy delivery based on the assumption that what customers want most is fast gratification. But there is a psychological phenomenon that might explain why split deliveries can prompt more returns: the sense of incompleteness that a disaggregated order might cause. Just after placing an online order, a customer may well receive two separate emails acknowledging that the order was received (one for each package) and then another two when each one is dispatched. This could trigger the Zeigarnik effect, named after psychologist Bluma Zeigarnik, who observed that our brains constantly remind us of unfinished tasks, whereas completed tasks are largely forgotten.

Most retail managers typically prioritize speedy delivery based on the assumption that what customers want most is fast gratification.

This need for closure creates a mental tension that is expressed as a desire to finish the interrupted task that gives it memorial prominence. So a customer who has received only one of their order's two parcels might not feel that their purchasing task has been completed until all of their items have been delivered. This mental burden may translate into lower satisfaction and higher returns.

We think that this need for task completion is likely the driving force behind customers being more satisfied when purchases arrive in consolidated deliveries. In other words, consolidation reduces the mental stress on consumers, lowering product returns and boosting profits. Retailers can think creatively about strategies to reduce this tension, even if they have to split deliveries. For example, they can increase communication after the first delivery to assure customers that everything is under control.

Orchestrating the Supply Chain

How can retailers start orchestrating their supply chains differently to ensure that delivery consolidation happens more often? The most straightforward suggestion is to enforce consolidation across the board. That would likely result in lower return rates and higher profitability.

However, such an approach requires that the retailer work with a fairly small portfolio of delivery companies to ensure that consolidation can happen without transferring stock between them — and that limits the price negotiation power that a larger portfolio of courier relationships can provide. That may be balanced out by unlocking additional savings in forward shipping costs, since each order, regardless of the parcels it produced, would result in just one customer delivery.

The truth is that some customers will prefer speed over convenience. Therefore, a more nuanced approach is to let customers have a say in the consolidation decisions affecting their orders. Hence, when customers place an online order, they should be given an option at checkout as to whether they want their items delivered together even if it might mean a longer delivery time. There is no doubt that some people will say no — they'll want their items fast. But we believe that many more people will opt for a single delivery.

Retailers can take a nuanced approach, letting customers have a say in the consolidation decisions affecting their orders.

Other retailers may prefer to intervene in the supply chain dynamically and in real time to consolidate the delivery of each customer order in certain circumstances. For the marketplace we teamed with, this would mean consolidating all orders with either a long delivery spread (the time between the delivery of two items of the same order) or a longer delivery lead time.

This strategy would require the marketplace to track the parcels produced by each order and estimate their time of arrival at the consolidation point, where the order could be combined into a single shipment. Based on these estimates, the retailer would decide whether the delivery should be split or consolidated.

Indeed, any fulfillment strategies that increase the likelihood of consolidated orders should decrease the probability of returns. And when retailers stop racing to deliver individual items as fast as possible, they might gain efficiency — and, more important, improve their environmental impact. ■

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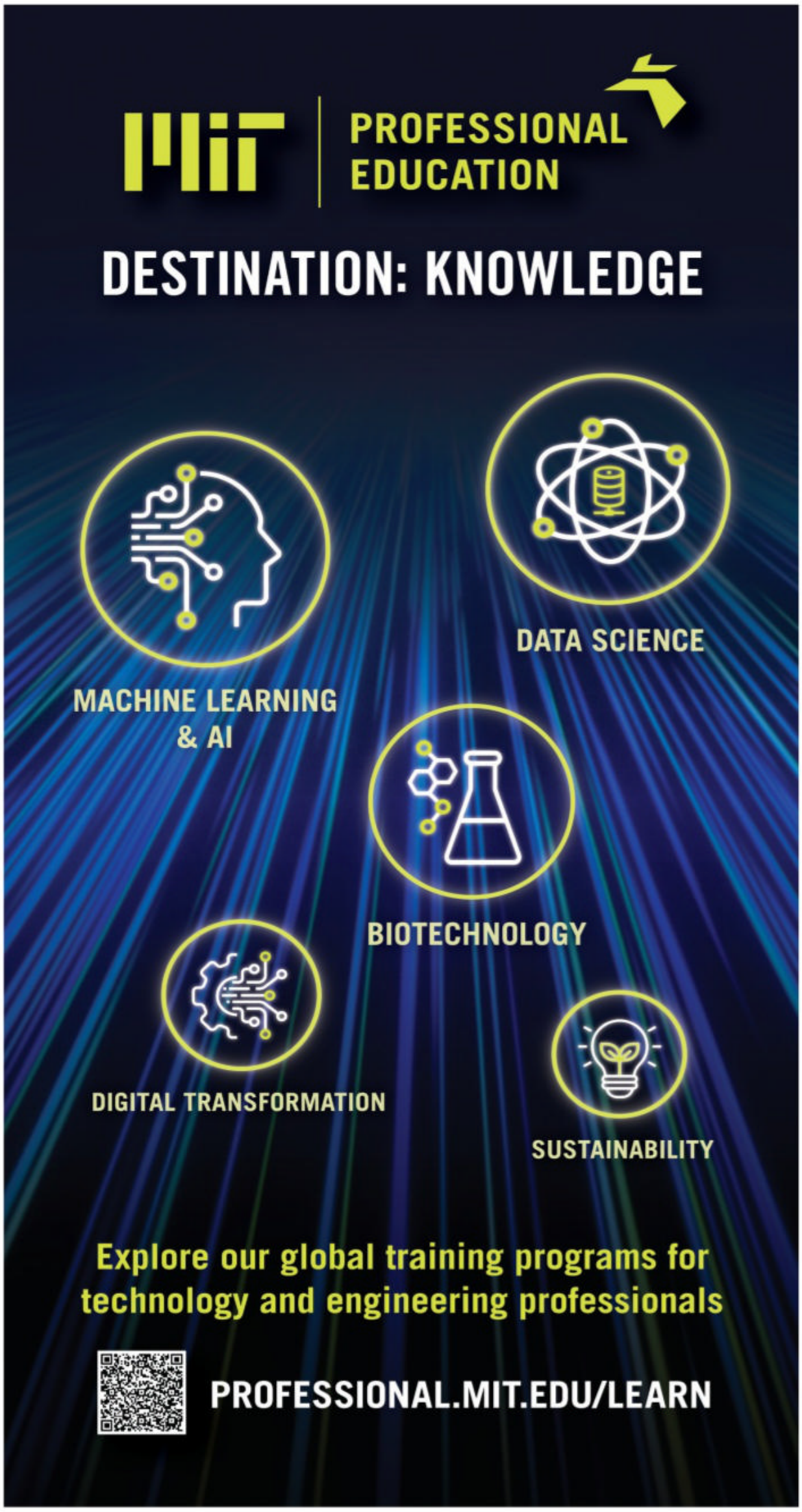

Tech at the Edge: Evaluating the Potential of Emerging Tools

To leverage the disruptive power of new technologies, leaders must keep an eye on their maturity and be ready to implement them before slower-moving competitors. But the key for would-be early adopters is to disregard hype and bring a critical mindset to planning which emerging tools to incorporate into their organizations' tech road maps.

That's not easy when investors and the media jump on the bandwagon of the supposed next big thing, and cries of "Don't get left behind!" drown out clear-eyed discussion of value-generating use cases. There's plenty of such noise around Web3, but we focus on one element that deserves business leaders' attention now: decentralized digital credentials. Mary Lacity, Erran Carmel, Amber Grace Young, and Tamara Roth explain how these blockchain-based systems work and take an in-depth look at several pilot projects that demonstrate their potential value but point to looming interoperability challenges and the need for standards.

For organizations on the forefront of implementing AI-based decision support models, we offer insight into how to dissect developers' performance claims — and determine the quality of AI tools' recommendations. Sarah Lebovitz, Hila Lifshitz-Assaf, and Natalia Levina observed how teams in health care evaluated new AI tools by digging deep into the ground truth on which their AI models were built and determining whether decision quality met current professional standards. Their guidance can help managers who are considering similar tools to ask the right questions of vendors and developers.

Finally, our look at quantum computing's readiness for business suggests that the headline-making race to prove "quantum advantage" over classical computing isn't so relevant to organizational decisions to invest in that technology. Instead, say Francesco Bova, Avi Goldfarb, and Roger Melko, enterprises should focus on seeking opportunities for quantum economic advantage — use cases where a quantum computer provides a commercially relevant solution faster than a classical computer could, or where a quantum computer provides viable solutions that differ from what a classical computer yields.

— The MIT SMR Editors

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The Quiet Corner of Web3 That Means Business

While the metaverse still lacks legs and crypto stumbles, managers who are keeping an eye on Web3 can learn from promising implementations of decentralized credentials.

By Mary Lacity, Erran Carmel, Amber Grace Young, and Tamara Roth

EXECUTIVES ARE HEARING A LOT about Web3, a blockchain-based road map for the future internet whose building blocks include cryptocurrencies, non-fungible tokens, decentralized autonomous organizations, and, perhaps most famously, the persistent virtual worlds that the so-called metaverse comprises. It's early days for most of these developments — but leaders who want to be out in front on emerging technologies should take note of decentralized credentials, one of the quieter but more promising applications under the Web3 umbrella.

While not every organization will need to build a brand in a metaverse or transact with cryptocurrencies, all organizations manage credentials as issuers, holders, and verifiers. Every organization *issues* credentials to employees, customers, suppliers, and partners; an account for identity management is the most ubiquitous credential issued. Every organization *holds* multiple credentials, such as a license to operate, taxpayer identification, and securities registration. Every organization *verifies* proof of credentials from employees, customers, suppliers, and partners. These three roles, along with a governing authority, form a credentials ecosystem. Today, organizations manage their credentialing needs with centralized databases or by paying trusted third parties. Solutions are often expensive, slow, frustrating to use, and wrought with cybersecurity risks. Let's not forget that the 2020 SolarWinds breach that affected hundreds of U.S. government organizations and businesses was enabled by stolen log-in credentials.

Decentralization empowers holders to control their own credentials via a digital wallet. It's up to the holder to accept a digital credential offered to them by an issuer or to provide proof of a credential to a verifier. Privacy is enhanced because holders often need to present only a part of a credential to a verifying organization. For example, customers ordering a beer at a pub can prove they are of legal drinking age without revealing other information that may be found on a driver's license, such as their name, exact birth date, disability status, or home address.

Andy Potts

For verifiers, decentralized credentials are efficient because digital verification happens in seconds, without

the need to contact the issuer directly. One of the most promising use cases is onboarding new employees. Hiring companies spend significant resources to verify a job candidate's background. On average, it costs $4,129 per hire, but the price tag can be as high as $40,000 per position for highly skilled workers.[1] Issuers can generate credentials once, with no need to recertify unless the credential has expired or changed.

Decentralized credentials also offer enhanced privacy because they're stored in digital wallets rather than in centralized databases, which are attractive targets for cyberthieves.

How Decentralized Credentials Work

Digital wallets are used to orchestrate interactions among issuers, holders, and verifiers of decentralized credentials. The wallets manage peer-to-peer relationships between two parties, such as an issuer and a holder, or a holder and a verifier. Both sides must agree that they want to be connected, and either side can terminate the connection at any time.

Once a peer-to-peer relationship has been established, transactions can take place. Issuers can send digitally signed credentials to holders, and holders can send proof of credentials to verifiers. The verifier's wallet pings a distributed trust registry (normally a blockchain) to ensure that the issuer, and only the issuer, could have digitally signed the credential.

Under the hood, the digital wallets and distributed trust registries can make use of decentralized identifiers. A wallet can create as many decentralized identifiers as needed. Each identifier is controlled by a private-public key pair. The private key resides in the wallet. Issuers, holders, and verifiers use one of their public keys to establish a peer-to-peer connection; issuers create digital credentials for one of the holder's public keys, and issuers sign credentials with one of the issuer's private keys.[2]

While decentralized credentials are still early in their maturity curve, with only a few implementations, leaders should learn about them now while keeping one eye on other Web3 technologies. (See "Envisioning the Next Web," p. 23.) The main challenge — beyond concerns about the technology's immaturity — is convincing the ecosystem participants to adopt decentralized credentials; training issuers, holders, and verifiers in new processes and technologies; and scaling the solution. Two recent standards from the World Wide Web Consortium (W3C) provide a framework for credential privacy, security, and interoperability.[3] While it's still too soon to make definitive prescriptions, our research shows that live production pilots have had encouraging results.

Below, we share stories and insights from three live but small implementations of decentralized credentials by the National Health Service (NHS) England, the Canadian province of British Columbia, and a U.S.-based consortium of financial credit unions. Each implementation addresses specific pain points in its credentialing ecosystem as part of a larger strategic initiative.

NHS England's Digital Staff Passport for Enabling Staff Movement

Credential issuers: NHS England's employing organizations

The reason for adoption: NHS England needed to move staff members among work sites quickly and safely during the COVID-19 pandemic. The solution, called the COVID-19 Digital Staff Passport, is part of its strategic people plan. NHS England comprises over 200 organizations (such as hospitals) operating as independent units, each with its own human resources systems. Staff members (doctors, nurses, and others) move around frequently, making more than 1 million transfers per year. In the past, each time an employee moved within the system, HR spent days verifying a slew of credentials: diplomas, training certificates, professional registration licenses, specific medical certifications, results of criminal background checks, and prior employment credentials. The paperwork involved was nightmarish. For just the doctors in training — a small segment of all transfers — the working time lost while they waited for credentials to be verified added up to a significant sum that was estimated to be in the millions of pounds sterling per month.[4]

The adoption journey: In 2019, NHS England convened ecosystem partners to work on the pilot solution, including NHSX (a joint unit between the U.K.'s Department of Health and Social Care, NHS England, and NHS Improvement), the U.K.'s General Medical Council, several NHS hospitals, and technology providers. The team adopted the W3C's verifiable credential standard and used a commercial product from Avast (formerly Evernym) as the digital wallet. For the pilot, NHS England chose the Sovrin Network for verifying that the issuer had signed the credential.[5] The Digital Staff Passport was launched in the summer of 2020 to help with staff movements during the pandemic.

Only existing NHS staff members are eligible to participate in the pilot, and adoption is voluntary. HR serves as the primary recruitment and training channel, since every transfer begins and ends with a visit to HR. The department is also best positioned to ensure that the hospital generates digital credentials for the correct employee, a process called identity binding.

At the exiting hospital, HR explains the benefits of the Digital Staff Passport: faster onboarding, carrying

all required credentials in one convenient place on their phones, providing backup and recovery of their credentials in case their phone is lost or damaged, and controlling who sees their credentials. The NHS employee downloads the wallet onto their phone, and HR sends the employee's wallet a request for a peer-to-peer connection. After the employee accepts the request, HR invites them to load their credentials into their wallet. Each credential essentially certifies, "This is an employee of the originating hospital, and we have already vetted their credentials for X, Y, and Z." At this point, the employee possesses a loaded wallet and controls with whom they will share their credentials. Now the employee can easily transfer from hospital to hospital as needed. At each new hospital, the employee sends HR proof of credentials that is machine-verified to ensure that an authorized issuer digitally signed the employee's credentials. The staff member is now ready to care for patients.

Results so far and next steps: As of November 2022, 105 NHS organizations had registered to use the system.[6] NHS England has reported promising results, though it has not published any statistics. We estimate that over 1,000 employees were onboarded with the Digital Staff Passport. NHS England has achieved cost savings from reduced administrative burden, increased staffing flexibility through easier transfers, and better health care services because employees are able to spend more time with patients. The employees have reported benefits from possessing all of their credentials in one place and having the ability to control the application at every step. Philip Graham, digital program director at Blackpool Teaching Hospitals, a leading NHS organization, said, "The solution enabled the rapid movement of staff during the pandemic and is still being used as part of COVID recovery activities. One of the next steps is to implement a strategic Digital Staff Passport with the interoperability of digital wallets, based on standards, to avoid vendor lock-in and put the staff member in control."

THE RESEARCH

- The authors have been studying decentralized credentials for nearly three years and have conducted over 100 interviews with thought leaders, early adopters, standards-making bodies, technology providers, and government agencies in North America and Europe.
- Their research also relies heavily on participant observation methods during the authors' involvement in the Trust Over IP Foundation, the COVID-19 Credentials Initiative, the Good Health Pass Collaborative, and the European Blockchain Services Infrastructure.

British Columbia's Verifiable Credentials for Businesses and Citizens

Credential issuers: The province of British Columbia (BC)

The reason for adoption: Digital credentials are part of the province's strategy to improve its ability to deliver services in the digital economy. John Jordan, executive director of the BC Digital Trust Service, explained that "online services" for many agencies often means emailing copies of credentials like registrations, licenses, passports, and permits, resulting in higher risks for fraud and identity theft. In such a scenario, government is not fulfilling its role to provide the digital foundation for businesses and citizens to help them easily lease property, open a bank account, apply for loans, seek insurance, and conduct other transactions that require onerous proof of registrations, licenses, or permits, Jordan said.

BC aims to create more open, trusted, and easy-to-use credentials for its businesses and citizens. It sees the move to digital credentials as the next evolution of credentials from handwritten documents decades ago and from more recent hard-to-counterfeit documents with seals and watermarks. It chose decentralized digital credentials based on the model created by the Linux Foundation's Trust Over IP Foundation.[7]

The adoption journey: BC started adopting digital credentials in 2018 with business registrations. As the issuer of these credentials, the province could easily create digital versions. Importantly, business registrations are in the public domain, so there was no unease about working with personally identifiable information in the pilot project.

The team comprised a manager and several developers. They first built the BC wallet with a web-based user interface for holders and verifiers, but they ran into a snag: With millions of business registrations in the province's wallet, searching for a particular business was slow. BC needed an enterprise-grade digital wallet, so it launched a successful 50,000 Canadian dollar ($37,000) public competition to build it as open-source software. (The province is holding the credentials on behalf of businesses for this first step. Ideally, in the future, authorized representatives of businesses will have their own wallets.) Like the NHS, the team chose the Sovrin Network to verify digital signatures. The solution, called OrgBook, was launched in 2019.[8] Now anyone can search the website to find verifiable business registrations.

In addition to the province's business registration credentialing initiative, in which it is an issuer, BC piloted a

Envisioning the Next Web

WHAT'S THE DIFFERENCE BETWEEN Web3 and Web 3.0? To understand what's shaping the competing visions for where the internet is going, we need to quickly review how it has evolved to date.

The internet as most of us experience it was born in 1989, when Tim Berners-Lee invented the World Wide Web, including the first web server and web browser, and HTML. These breakthroughs created commercial and consumer potential for what had been largely a network infrastructure used by governments and research institutions. With the introduction of commercial browsers and search engines in the early 1990s, individuals were able to find information hosted on servers and download static webpages.

What we call Web 2.0 came about around 2003-2004 as webpages became dynamic and interactive, enabling users to contribute content. Developers built web apps with rich functionality to create new social media networks and e-commerce platforms; the most successful have become tech giants with near-monopoly power thanks to commercial network effects. Users "pay" for nominally free online services by allowing their personal data to be collected and their online activity to be tracked so that advertisers can target them. Harvard Business School professor Shoshana Zuboff has famously dubbed this practice "surveillance capitalism."

Proponents of the third significant evolution of the web aim to disperse power and control to individuals. Different communities have different ideas for how to achieve this. The Web3 Foundation, led by Ethereum cofounder Gavin Wood, believes the goal can be met with a decentralized web that is based on cryptography and blockchain.[i] Key components of what this group calls Web 3.0 include digital wallets, asset tokenization, self-executing agreements, the persistent virtual worlds of the so-called metaverse, and the subject of this article — decentralized credentials.

W3C Consortium director Berners-Lee also uses the term Web 3.0 to describe a decentralized web based on the Solid protocol, which grew out of a research project at MIT. This approach aims to give users control of their data and information via decentralized data stores called pods. The Solid website describes these as secure personal web servers for data; users control which people and applications can access their pods. (Two decades ago, Berners-Lee was more focused on developing a future "semantic web" of machine-readable data.) He has publicly rejected the Web3 idea of a new system for internet applications built on blockchain, calling it "not the web at all."[ii]

Decentralized credentials encompass the cryptography of Web3 but also conform to the W3C standards of the current web.

— Elizabeth Heichler

solution where the government acts as a verifier. For this credentialing ecosystem, the Law Society is the issuer of membership credentials; 100 lawyers were selected as the holders for the pilot, and the Justice Services Branch of the Ministry of Attorney General is the verifier. This initiative facilitates the credentialing process that allows lawyers to access recorded court sessions and obtain other classified documents from the government. In September 2022, BC deployed its own digital wallet as a soft launch; anyone can download the wallet app on their phone and follow instructions to practice receiving and sharing fictitious credentials in preparation for a future rollout with real credentials.[9]

Results so far and next steps: Jordan described the province's decentralized credentials adoption journey as a "responsible and respectful rollout" overall. Incremental value is delivered with each step, such as providing a free public service for anyone to search, find, and validate business credentials. BC — in cooperation with other jurisdictions — plans to develop its own distributed trust registry. "When verifiable credentials take off, it becomes critical infrastructure that the government should provide for its citizens so that they can confidentially conduct their digital lives," Jordan said.

Bonifii's MemberPass for Credit Union Members

Credential issuers: Credit unions

The reason for adoption: Bonifii is a service organization that supports 70 U.S.-based credit unions. The credit unions sought more secure and trusted digital services. Their centralized identity systems, based on accounts and passwords, kept getting more onerous as members needed to use two- or three-step authentication. Scammers increasingly sent members fraudulent texts or email messages, increasing the risks of identity

theft and fraud. Decentralized credentials offered a better way for the credit unions to verify members and for members to verify that they were in fact interacting with their credit unions.

The adoption journey: Bonifii, three credit unions, and a technology provider first tackled proof of membership and started to develop MemberPass in 2019. As in the previous two cases, the Sovrin Network serves as the public registry to verify digital signatures. Sovrin is based on the Trust Over IP Foundation's and FIDO (Fast ID Online) Alliance's principles.[10] MemberPass claims to be "the first [Know Your Customer]-compliant member-controlled digital identity issued by credit union cooperatives."[11]

The digital credential was kept simple: It provided machine-verifiable proofs of member ID number, credit union name, and membership activation date. The credit unions first recruited current members to adopt the credential when they visited a branch. Soon after launch, they enabled phone enrollment. MemberPass can now be used in person, at a branch, at ATMs, on phone calls to call centers, and online.[12]

Results so far and next steps: By the second quarter of 2021, seven credit unions were participating and over 22,000 members had downloaded the MemberPass wallet. By the first quarter of 2022, 10 credit unions had joined the effort and the number of adopters had increased fivefold. For members, the key benefits are convenience and confidence that they are dealing with their credit unions and not with fraudsters. The benefits for the credit unions are more efficient transactions, reduced risk of fraud, and more trusted relationships with members.

A new version of MemberPass with additional features was released in August 2022. Credit unions and Bonifii continue to work on scaling MemberPass to a target population of 6.5 million members. Overall, scaling the technology has been slow. John Ainsworth, CEO of Bonifii, said to us in 2022 that "decentralized credentials are still early days but will be a crucial part of Web3."

Insights From the Pioneer Cases and Beyond

As the three cases demonstrate, implementations show promising results for all roles in the credentials ecosystem: Holders possess and control who sees their credentials; issuers can generate credentials once, with no need to recertify unless the credential changes or is revoked; and verifiers can validate credentials in seconds. (See "Key Roles in Credentials.") In these cases, transaction costs are low for issuers and free for holders and verifiers.[13] At the ecosystem level, cybersecurity benefits arise from managing relationships with peer-to-peer connections instead of with centralized accounts and passwords, and from storing credentials on edge devices in digital wallets rather than in centralized databases.

While these results are promising, we wondered whether a centralized solution could have delivered similar outcomes, so we asked the pioneers. For the NHS, integrating and centralizing HR records from 1,200 hospitals would be technically and politically prohibitive. Furthermore, decentralization means that hospitals do not relinquish control. Bonifii is in a similar situation, since credit unions are independent. In Canada, a centralized solution would not be appropriate, as the provinces are the authoritative issuers of credentials such as birth certificates, driver's licenses, and business registrations.

Despite the promised value, there are significant adoption challenges to overcome, such as recruiting ecosystem partners, managing change, and scaling the solution to support increased participation and additional types of credentials. Interoperability and technical immaturity also raise concerns. Here's our take on adoption at this point:

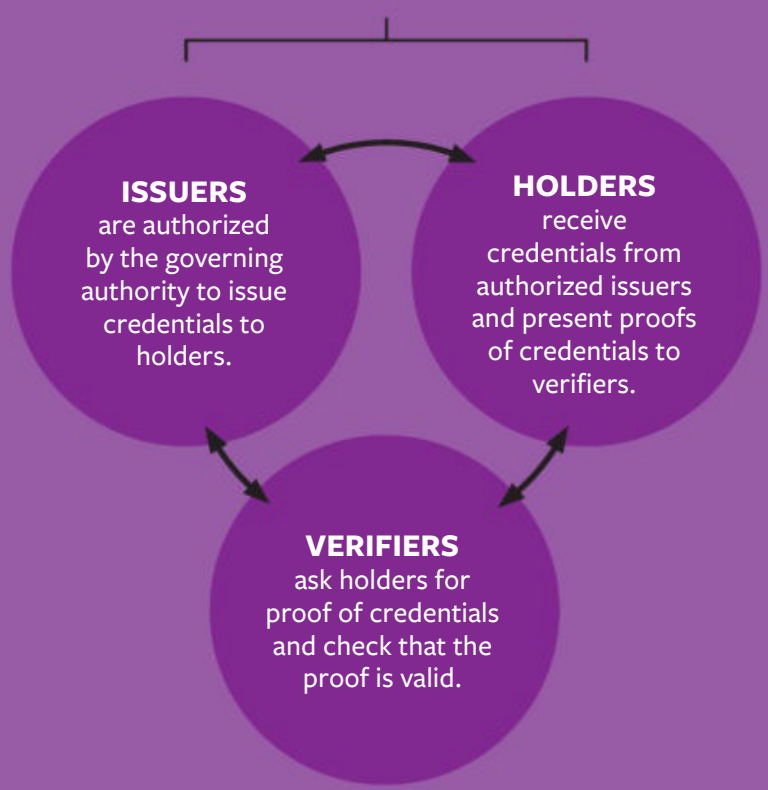
1. Get started with issuers, which are best positioned to lead adoption. Unlike most software applications that are adopted within organizational boundaries, decentralized credentials work only if an entire ecosystem adopts it. To jump-start a solution, there must be authorized credentials available, so it makes sense that issuers led the pilots in all three of the cases above, with support from the governing authorities. In both the NHS and Bonifii cases, the hospitals and credit unions (respectively) are simultaneously issuers and verifiers, thus reducing the recruitment effort.

2. Don't boil the ocean: Start with a subset of issuers, holders, and verifiers. Starting with a subset of adopters allows the development team to deliver a solution fast. If successful, the team proves the value to the larger ecosystem. NHS England started with just a fraction of its 1,200 hospitals and staff members. Bonifii started with three credit unions and a small percentage of members. As the issuer, the province of British Columbia

Many experts argue that governments must invest in decentralized credentials as part of an international digital infrastructure.

KEY ROLES IN CREDENTIALS

Every credentialing system involves four roles: governing authorities, issuers, verifiers, and holders.


GOVERNING AUTHORITIES
specify rules for credentials and who is allowed to issue, hold, and verify them.
ISSUERS
are authorized by the governing authority to issue credentials to holders.
HOLDERS
receive credentials from authorized issuers and present proofs of credentials to verifiers.
VERIFIERS
ask holders for proof of credentials and check that the proof is valid.

started with business registrations for its first service. For another service, it included one issuer (the Law Society), one verifier (the Justice Services Branch of the Ministry of Attorney General), and 100 lawyers.

3. Make holder adoption voluntary and onboarding easy. Holders need to understand how they would benefit from adopting a digital wallet. Once they agree to try the solution, they must download the correct digital wallet and learn how to accept connection requests, load credentials from issuers, and share proof of credentials with verifiers. Issuers in two cases recruited, trained, and performed the important first step of identity binding at the point of service. For NHS England, identity binding took place when a staff member was about to be transferred; for MemberPass, it occurred when a member visited a credit union branch. Initially, each organization recruited and trained holders one at a time. Eventually, additional communication and onboarding channels were added, such as websites, promotional videos, and email invitations.

4. Consider interoperability: Will standards save us? While all three cases used the Sovrin Network to verify digital signatures because, as multiple research participants told us, "it was the only decentralized credentials network that existed at the time," over 100 competing networks are underway.[14] Interoperability will be a problem if networks operate as islands. Also, only a few digital wallets are commercially available, with many more anticipated. Research participants fear that organizations may replace a plethora of accounts and passwords with a plethora of digital wallets. This may evolve to look like the many apps we all have on our smartphones today.

Many standards organizations are working directly or tangentially on decentralized credentials, such as for the use of biometrics for identity binding. The standards landscape includes the W3C for decentralized identifiers and verifiable credentials; the Trust Over IP Foundation for white papers, specifications, and recommendations for wallets to be interoperable with any distributed trust registry; the Decentralized Identity Foundation for an interoperable and open ecosystem; FIDO for authentication on edge devices such as smartphones; and the International Standards Organization for several related standards, including one around mobile driver's licenses. Standards may complement or compete with one another, depending on how they develop.

5. Consider scalability: Should governments take the lead? So far, there are no scaled solutions. Because so many of society's bedrock credentials come from governments, many experts we spoke with argued that governments must step up and invest in decentralized credentials as part of an international digital infrastructure. After all, the U.S. government assumed a similar role in the past by funding and supporting the development of the internet in its nascent stages.

Perhaps the most interesting government-led initiative is the European Digital Identity Wallet project. Cross-border identity authentication has long been a challenge in Europe, where each country issues unique credentials and privacy concerns are paramount. The European Union has taken a top-down approach in leading the charge for interoperable digital identity wallets. Early national proof-of-concept and pilot projects include the NESSI project for digital tax IDs in the German state of Bavaria, and Validated ID with CaixaBank and Aigües de Barcelona for customer identification in Spain. A currently piloted cross-border use case is European Blockchain Services Infrastructure's digital diploma multi-university project. Revision of the EU's Electronic Identification and Trust Services Regulation, rolling out this year, will provide identity verification and credential authentication for ID cards and driver's licenses.

Other experts believe that even if governments catalyze some key credentials, some issuers may still

resist switching to a business model where credentials are verified with public trust registries instead of with their internal databases. Some issuers, like credit reporting companies, make their money by charging for verifications, and the decentralized credentials model we described in the three cases would disrupt that model. David Huseby, who formerly worked on security at Hyperledger, believes the scaling of decentralized credentials models that rely on digital wallets and external validation has been slow because they require a "rip and replace" business model. Huseby and Rick Cranston, a cofounder of Bonifii, have cofounded Cryptid, where their new decentralized solution does not use digital wallets but instead relies on APIs to existing infrastructure. In their solution, holders still digitally control requests from verifiers, but the holders can also route requests to issuers. Issuers respond at the time of the requests to retrieve the most up-to-date proof of credentials from their internal databases. Issuers can continue to charge fees for verification, but there is a downside that should be acknowledged: Issuers can track user activity.

THE MODEST STARTS WE STUDIED SIGNAL A promising future for decentralized credentials in business and society. Decentralized credentials offer a very different model for online trust. If we can solidify the technological foundations, value-added use cases abound. Entrepreneurs will be able to open a bank account and get competing offers for a business loan with the click of a button. Companies won't need to issue W-2 forms in order for workers to file tax returns in the U.S. Running background checks and onboarding employees and suppliers will be virtually instantaneous. Employees won't fall for phishing attacks, because it will be easy to verify the origin of a message. Increased transparency around suppliers' credentials will inhibit money laundering and promote ethical supply chains. Streaming services will be able to quickly verify that the user renting a PG-13 movie is age 13 or older. Stores will be able to sell alcohol online, or as part of a grocery pickup order, without the risk of the buyer being under the legal drinking age. Patients will be able to share medical records with doctors in different hospital systems and order prescription medicines online.

In addition to providing credentials for humans, decentralized credentials can be used for anything that needs one, including animals, plants, pharmaceuticals, raw materials, machines, and finished products. Company or product attributes such as "woman-owned" or "certified fair trade" will be more meaningful for being verifiable.

Such possibilities are not inevitable; they will happen only if governments, businesses, and individuals learn about decentralized credentials and actively participate in the development and standardization of supportive ecosystems that can interoperate across a multitude of domains. Broad-scale cooperation and regulation will be pivotal to timely adoption and the ability to realize value from this critical Web3 component. ■

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The No. 1 Question to Ask When Evaluating AI Tools

Determining whether an AI solution is worth implementing requires looking past performance reports and finding the ground truth on which the AI has been trained and validated.

By Sarah Lebovitz, Hila Lifshitz-Assaf, and Natalia Levina

IN THE FAST-MOVING AND HIGHLY COMPETITIVE ARTIFICIAL INTELLIGENCE sector, developers' claims that their AI tools can make critical predictions with a high degree of accuracy are key to selling prospective customers on their value. Because it can be daunting for people who are not AI experts to evaluate these tools, leaders may be tempted to rely on the high-level performance metrics published in sales materials. But doing so often leads to disappointing or even risky implementations.

Over the course of an 11-month investigation, we observed managers in a leading health care organization as they conducted internal pilot studies of five AI tools. Impressive performance results had been promised for each, but several of the tools did extremely poorly in their pilots. Analyzing the evaluation process, we found that an effective way to determine an AI tool's quality is understanding and examining its *ground truth*.[1] In this article, we'll explain what that is and how managers can dig into it to better assess whether a particular AI tool may enhance or diminish decision-making in their organization.

Andy Potts

What Is the Ground Truth of the AI Tool?

The quality of an AI tool — and the value it can bring your organization — is enabled by the quality of the ground truth used to train and validate it. In general, ground truth is defined as information that is known to be true based on objective, empirical evidence. In AI, ground truth refers to the data in training data sets that teaches an algorithm how to arrive at a predicted output; ground truth is considered to be the "correct" answer to the prediction problem that the tool is learning to solve. This data set then becomes the standard against which developers measure the accuracy of the system's predictions. For instance, teaching a model to identify the best job candidates requires training data sets describing candidates' features, such as education and years of experience, where each is associated with a classification of either "good candidate" (true) or "not a good candidate" (false). Training a model to flag inappropriate content such as bullying or hate speech requires data sets full of text and images that have been classified "appropriate" (true) or "not appropriate" (false). The aim is that once the model is in production, it has learned the pattern of features that predicts the correct output for a new data point.

In recent years, there has been growing awareness of the risks of using features from the training data sets that are not representative or that contain bias.[2] There is surprisingly little discussion, however, about the quality of the labels that serve as the ground truth for model development. It is critical that managers ask, "Is the ground truth really true?"

The first step in gaining clarity into the ground truth for a tool is to investigate the metric typically used by AI companies to support performance claims, known as the AUC (short for *area under the receiver operating characteristic curve*). The AUC metric summarizes the model's accuracy in making predictions on a scale of 0 to 1, where 1 represents perfect accuracy.[3] Managers often fixate on this metric as evidence of AI quality — and take at face value the comparison with an AUC for the same prediction task done by humans.

The AUC is calculated by comparing AI outputs to ground truth categories that were used by AI designers. The AI output is considered correct if it matches the ground truth label and incorrect if it does not. The usefulness and relevance of the AUC metric is contingent upon the quality of the ground truth labels, which cannot simply be assumed to be high-quality sources of truth.

Here's the underlying problem: For many critical decisions in organizations, there is rarely an objective "truth" ready to be fed to an algorithm. Instead, AI designers construct ground truth data, and they have considerable latitude in how to accomplish this. For example, in the medical context, AI developers make significant trade-offs when choosing what ground truth will be used to train and validate a cancer diagnosis model. They could use biopsy results to serve as the ground truth, which would provide an externally validated result for whether cancer was detected. However, most patients never undergo biopsy tests (thankfully), and acquiring these results for all patients in the training data set would require enormous investment and patient cooperation.

Alternatively, developers may use the diagnosis recorded by the clinical physician overseeing a given patient at the time. This data is relatively easy to acquire from historical electronic health records. Developers could also recruit an expert physician, or a panel of experts, to produce a diagnosis for a sample of cases in the training data set, using the average or majority of their opinions as the ground truth label. Creating this type of data set may be costly and time-consuming, but it is commonly done in the medical AI community. In any case, AI developers weigh the relative costs and benefits when deciding how to assign ground truth labels — a decision that has great influence on the overall quality and potential value of the tool.

To identify an AI tool's ground truth, simply ask the vendor or developers. Verify their answers by searching for "ground truth" or "label" on technical research reports and methodology summaries. For medical tools subject to regulatory approval, this information is publicly available on the U.S. Food and Drug Administration website. We recommend deeply engaging with AI vendors and internal development teams and having open conversations about their ground truth selections, their logic behind those choices, and any trade-offs they considered. Reticence to discuss these topics transparently should be interpreted as a serious red flag.

How Objective or Externally Verifiable Is the Ground Truth?

In some contexts, what is considered the truth about a given decision outcome may be straightforward and widely agreed upon. If so, the AI ground truth may consist of more objective data sets. For example, to predict the impact of tropical storms, AI designers may rely on the volume of insurance claims and government payouts to serve as the ground truth for

labeling a weather event as highly damaging or not.

However, many AI solutions on the market focus on more subjective decision contexts, where experts often disagree about whether a decision was "true" (domains such as criminal justice, human resources, college admissions, strategic investing, and so forth). In many contexts of medical diagnosis, there is often no objective means to validate a given decision as accurate or not. In lieu of such an objective source, AI designers often use physicians' diagnostic opinions to represent the truth in their AI training data. They do this even though published medical research shows high variability and subjectivity across even the most seasoned and qualified experts, especially when it comes to making diagnoses for diseases that are very hard to differentiate.

Validating experts' decisions is extremely challenging and in some cases impossible. For instance, if a patient never returns to the diagnosing clinic, one may conclude that the doctor's diagnosis was accurate and the treatment was effective, even if the patient's condition worsened and they decided to seek help elsewhere.

Such variability and subjectivity are exactly what is fueling investment in AI tools that can address these thorny decision contexts. Yet the very fact that they are subjective makes finding high-quality ground truth very challenging. Given that these decision contexts are also where we find sensitive issues involving high risk and ethical implications, it is especially important to investigate the ground truth and consider the best practices used by human experts making similar decisions unassisted by AI. How much subjectivity or variability is inherently involved in making this decision? How are decisions validated? That is, what are the established and acceptable ways to gauge the quality of experts' decisions in that particular context?

In many professions, there are accepted standards for high-quality decisions — that is, what experts agree is the best way to evaluate a given judgment, with respect to the constraints and limitations at hand. These vary significantly across contexts, organizations, and fields of expertise. Managers evaluating tools for particular decisions should ask the human experts making those same decisions what the current standards and best practices for evaluating decision quality are for that specific domain.

Examples from our study demonstrate the diversity of these standards, even within the general area of cancer diagnosis. For breast cancer diagnosis, radiologists' judgments are validated against pathology results from biopsy studies. In the case of demarcating the boundaries of brain tumors, there is no single method that experts agree upon as the clear standard for evaluating judgments. Going beyond the medical context, in the field of human resource management, is a successful job candidate the one who passes all interviews — currently the popular ground truth for AI tools in this domain — or the one who gets hired and shows superior job performance for many subsequent years?

How Does the AI Ground Truth Compare to the Ideal Standard for Experts' Critical Decisions?

Once the ideal or gold standard for assessing experts' critical decisions is clear, it is time to compare it to the AI developers' methods for determining the ground truth used to train and validate the algorithm. The following case from our study illustrates the importance of this culminating step.

Health care managers were planning to conduct a pilot study of an AI tool for breast cancer diagnosis. In the course of debating what to use as the ground truth to validate the tool's performance on their internal data, they looked at what the AI developers had used for initial performance tests. They were shocked at what they discovered.

The AI tool was designed to predict "likely cancer" or "likely benign" on the basis of one mammography image input. In this decision context, the gold standard to validate this diagnosis would involve final pathology results and long-term patient health outcomes (data that is difficult and costly to acquire). Instead, the AI designers chose to construct ground truth labels to validate the tool by asking a panel of radiologists to render a judgment after looking at a single mammogram (the same input as the AI model). When they subsequently ran human-versus-AI performance tests on the model, they claimed it was an apples-to-apples comparison, where their panel of experts performed the same decision-making task as the AI model on the basis of the same single mammogram. The results of the test were striking and made headlines: The AI tool outperformed every expert in the study.

However, in peeling back the layers of this performance report, managers in our study would discover

THE RESEARCH

- The authors set out to explore how professional work is being impacted by advanced technologies.
- They conducted an in-depth qualitative field study within a health care organization actively developing, adopting, and using AI for significant decision-making tasks.
- Data collection involved 11 months of in-hospital observation, more than 40 long-form interviews, and analysis of archival documentation.

that the ground truth used was severely inadequate in comparison to the accepted standard in the professional field. This misalignment created dangerous misconceptions about the tool's potential value.

The managers understood that validating diagnosis decisions on the basis of a single mammogram would be ludicrous — and dangerous. If a biopsy is unavailable or ill-advised, the acceptable professional standard for reviewing such a case involves much more thorough analysis. This practice involves noting changes over multiple follow-up appointments, reviewing and comparing numerous images (such as 3D tomosynthesis images and ultrasounds), conducting physical examinations and assessing the individual's risk factors (such as age, family history, and surgical history), and even requesting additional targeted imaging. Having discovered the vast disparity between their standard and that used to establish the AI tool's ground truth, the managers in our study decided to partner with internal data scientists to design a new tool using better ground truth labels.

It is highly likely that managers will encounter AI vendors using less-than-ideal sources of ground truth, given the costs and feasibility of obtaining high-quality ground truth data and perhaps their desire to show the tool's performance in the best light. That's why it's crucial to seek tools that have been trained on ground truth data that most closely approaches the ideal standard for decision-making quality in that knowledge domain. This ground truth data should encompass experts' know-how (their real-world deliberative knowledge processes), not just their "know-what" (the decisions recorded in the labels of a data set).

If the ground truth has been constructed in a way that closely resembles the experts' gold standard, that is a green light to move to further evaluation, such as assessing fit with technical infrastructure and conducting internal pilot studies. But if the AI ground truth is inferior, we recommend caution. If it's possible to influence the development process, push to redesign the AI tool using higher-quality ground truth data. Otherwise, adopting AI tools with inadequate ground truth will pose significant risks: Decision quality will be diminished to match the lower quality dictated by the ground truth data. Moreover, as organizations and our society adopt these tools at scale, professional learning will be greatly impeded as the remnants of experts' valuable know-how are lost and replaced by the AI model and outputs. We may accept this risk if we believe that AI is learning from high-quality ground truth and is doing so faster and better than humans can, but not otherwise.

Overlooking shaky AI ground truth data for critical decisions can have severe and lasting consequences.

AI PRODUCTS ON THE MARKET ARE MEANT to dazzle, and managers may be tempted to take vendor promises and performance claims at face value, given the challenges of evaluating these tools. But overlooking shaky AI ground truth data for critical decisions can have severe and lasting consequences. We suggest that managers peel back the layers of AI performance reports to identify and assess the ground truth that these systems were built with. Only then can they effectively assess whether an AI tool will deliver sufficient value to their organization. Doing so can deliver other benefits as well: We found that managers who followed the diligent process of evaluating AI often came to reevaluate their human experts' decision processes and found ways to improve them.

Finally, policy makers and researchers should also keep in mind that ground truth decisions made by AI designers have far-reaching influence, not just in the organizations that test and adopt AI tools, but on important societal issues that will have lasting impacts. They too need to consider ground truth as part of the discussion around AI adoption. ■

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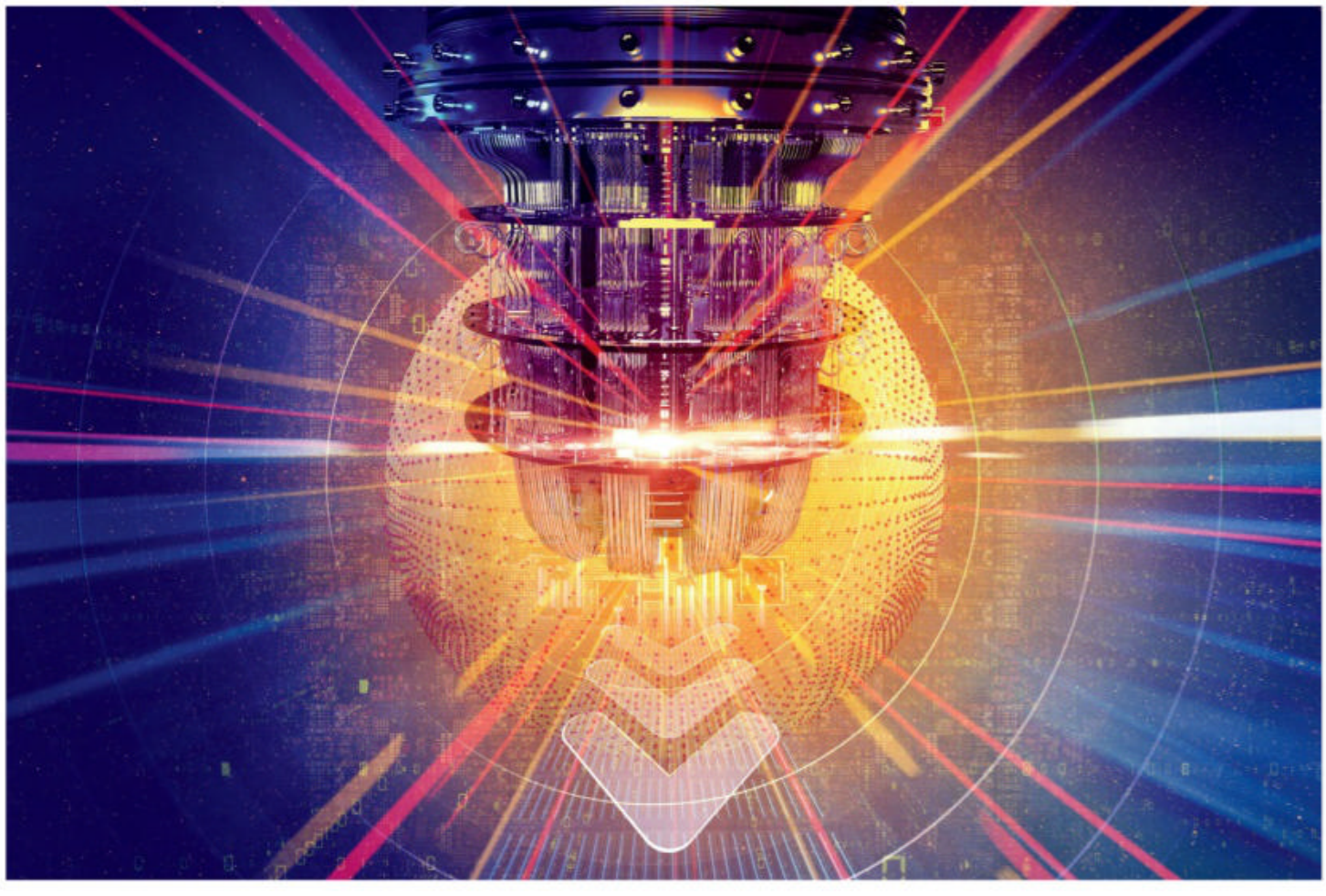


The Business Case for Quantum Computing

Quantum computers may deliver an economic advantage to business, even on tasks that classical computers can perform.

By Francesco Bova, Avi Goldfarb, and Roger Melko

IMAGINE THAT A PHARMACEUTICAL COMPANY WAS ABLE to cut the research time for innovative drugs by an order of magnitude. It could expand its development pipeline, hit fewer dead ends, and bring cures and treatments to market much faster, to the benefit of millions of people around the world.

Or imagine that a logistics company could dynamically manage the routes for its fleet of thousands of trucks. It could not only take a mind-numbing range of variables into account and adjust quickly as opportunities or constraints arose; it could also get fresher products to store shelves faster and prevent tons of carbon emissions every year.

Quantum computing has the potential to transform these and many more visions into reality — which is why technology companies, private investors, and governments are investing billions of dollars in supporting ecosystems of quantum startups.[1] Much of the quantum research community is focused on showing *quantum advantage*, which means that a

Andy Potts

quantum computer can perform a calculation, no matter how arbitrary, that is impossible on a classical, or binary, computer. (See "A Quantum Glossary.") Running a calculation thousands of times faster could create enormous economic value if the calculation itself is useful to some stakeholder in the market.

However, the expense of building quantum hardware, coupled with the steady improvement of classical computers, means that the commercial relevance of quantum computing won't be apparent unless researchers and investors shift their focus to the pursuit of what we call *quantum economic advantage*. A business achieves a quantum economic advantage when a quantum computer provides a commercially relevant solution, even if only moderately faster than a classical computer could, or when a quantum computer provides viable solutions that differ from what a classical computer yields.

Why Quantum Economic Advantage Matters

In a dramatic first, a team at Google led by John Martinis made headlines around the world in 2019 when their quantum machine appeared to complete a calculation (cross-entropy benchmarking) in seconds that would take tens of thousands of years on a classical computer.[2] Other companies have made similar claims of quantum advantage, including researchers from quantum computing startup Xanadu, which recently completed a well-defined task (Gaussian boson sampling) in under a second that would have taken the best classical supercomputer over 9,000 years.[3]

Hundreds of articles and many of the top minds in the field have focused on showing these kinds of quantum advantage.[4] Their demonstrations represent important milestones in the development of quantum computers. But because they typically involve esoteric computations that might not be relevant to the kinds of problems many businesses need to solve, managers might assume that the technology isn't yet useful and economically viable for businesses. We contend that quantum technology need not provide a quantum advantage to be economically useful, as long as it can still provide different or timelier outputs than its classical counterparts. Any quantum speedup provides an opportunity for quantum economic advantage. (See "Landscape of Quantum Economic Advantage," p. 36.)

While quantum advantage will be directly useful in some cases, many of the most important uses of quantum computers will arise from providing cost-effectiveness and speed rather than from performing a calculation that is impossible on a classical computer. In other words, a quantum economic advantage may exist without a quantum advantage.[5]

Quantum speedups create an appetite for solutions to business challenges where the ability to solve complex problems extremely quickly would confer a powerful competitive advantage. Considerable effort in quantum computing is dedicated to searching for potential speedups for business problems, although evidence for a robust quantum speedup for commercially relevant problems has been elusive. Nonetheless, identifying and realizing such commercial potential provides a crucial incentive to build quantum computers and significantly influences their design.

Classical computing remains a valuable tool for solving complex problems; the pioneering work of AlexNet (deep learning) and AlphaFold (protein structure) are two examples that have high commercial value. Quantum computing might be the better tool to solve a business problem if it provides the solution more quickly than a classical competitor. Running the same calculation on both quantum and classical computers may also provide two different answers, either of which might be better. When the commercial stakes are high enough, having both classical and quantum solutions can be useful, meaning the quantum solutions might still be commercially valuable.

The question of when existing or forthcoming improved quantum computers will generate substantial commercial opportunities is therefore of immediate interest, long before clear-cut quantum advantage will become obvious in future fault-tolerant machines.[6]

When commercial stakes are high, having both classical and quantum solutions can be useful.

Opening Valuable Commercial Frontiers

Identifying the commercial potential of a quantum computer does not require an understanding of the quantum physics that undergird the technology. Instead, the focus should be on what quantum computers can do better, faster, or perhaps differently than classical computers and on the stakeholders who will see those outcomes as valuable. The visions from the pharmaceutical and logistics

A Quantum Glossary

TECH-FLUENT EXECUTIVES SHOULD BE familiar with these basic quantum computing terms as they monitor the technology and consider potential applications in their own business domains:

Qubit: A qubit is a fundamental unit of quantum information, encoded in delicate physical properties of light or matter and manipulated to produce calculations in a quantum computer. It is analogous to a bit in a classical (binary) computer.

Fault-tolerant quantum computer: These general-purpose digital quantum computers will be able to engage with a broad range of problems with flexibility and reliability. Fault-tolerant computers are proven to have cases of quantum advantage, such as Shor's algorithm. But they may be many years away from being realized at scale because of the complex error-correction protocols required for qubits.

Noisy: The quantum computers of today and the near term are noisy, similar to the AM/FM radios that existed long before their digital equivalents were possible. Quantum noise is a much more difficult problem to solve in delicate qubits than electronic and magnetic noise in conventional computer bits.

Quantum speedup: Speedup is a way to measure the relative performance of two computers solving the same problem. Quantum speedup is the improvement that the quantum computer has over a classical competitor in solving the problem. There are many ways to define and characterize speedup. One important metric is how it scales with increasing qubit numbers.

Quantum advantage: This occurs when quantum computing solves an "impossible" problem, or rather one that a classical computer cannot solve within a feasible or realistic amount of time. The clearest cases of quantum advantage are defined via an exponentially scaling quantum speedup.

Quantum economic advantage: This occurs when quantum computing solves an economically relevant problem either differently or significantly faster than a classic computer. Quantum economic advantage can occur in cases where quantum speedup is less than exponential — that is, when the scaling is quadratic or polynomial.

sectors that we shared at the start of this article illustrate the transformative effects that quantum computing could have. The examples we highlight below show the high value that quantum computing can already unlock within existing workflows.

Make better investment decisions faster. The finance industry faces many optimization problems. Finding the optimal trading trajectory, for example, involves determining the best trading strategy for an investment portfolio over a specific period. Portfolio optimization is a valuable problem to solve, given that over $100 trillion in assets are under management globally.[7] Even small improvements in optimization techniques are valuable because of the absolute level of assets invested.

In some cases, determining the optimal investment strategy requires a search through all possible trading trajectories. That effort grows exponentially more challenging as the number of possible securities in the portfolio and the number of opportunities to change the portfolio increase. Recent work has attempted to tackle a portfolio optimization problem that has $10^{1,300}$ possible trading strategies — a quantity far in excess of the number of atoms in the visible universe (10^{80}).[8]

Quantum machines may be able to help.[9] Researchers at the quantum software company Multiverse Computing compared a handful of different methods for solving the optimal trading trajectory problem. Only two of the six optimization methods provided a solution for the most complex version of the problem assessed, and the classical solution took almost 700 times longer to generate than the quantum solution. The quantum tools also yielded a different solution — one with higher profits but lower risk-adjusted returns — than the one suggested by strictly classical techniques.

These outcomes are not an example of quantum advantage, because it remains possible that an exhaustive assessment of all possible approaches to solving this problem might generate solutions that are the same as or better than the quantum approaches the researchers at Multiverse used. But it may nevertheless represent an example of quantum economic advantage, because generating a solution quickly is valuable. (See "Gaining an Edge When Time Is Money," p. 35.)

Determining which of the two solutions is better — quantum or classical — remains a challenge. While

financial market stakeholders currently don't have access to fully fault-tolerant quantum computers, they also typically don't have easy access to the classical supercomputers that are used to benchmark quantum advantage. Thus, comparing current quantum approaches to classical optimizers that are sold commercially still provides a valuable benchmark for the efficacy of a quantum approach. The best classical supercomputers might still generate a similar or superior solution in a timely manner — that is, in a time span that is less than one human lifetime.

Solve seemingly unsolvable business trade-offs. Almost any business problem that involves complex trade-offs — from day-to-day planning to long-term strategic decisions — could be well suited for quantum computers. Think of retailers that are assessing where to place certain products in their stores to maximize revenue, or educators trying to assess which questions to ask and in which order to maximize learning. These trade-off challenges are known as *combinatorial optimization problems*. The creation of the best-tasting recipe at a restaurant is also a combinatorial optimization, as are the logistics challenges we described at the beginning of this article. Even modest improvements can have a major impact on a company's profitability.

Business leaders often rely on human intuition to solve these optimization problems. As businesses grow, they may come to rely on computing power to identify the best solutions. For the most complex of these problems, even today's most powerful computers can provide only an approximation. Quantum computers could, however, perform a search through all possible combinations of arrangements or sequences to find the best solution, providing a moderate speedup over comparable classical searches.[10]

That's where they can have a wide range of applications in almost any business sector. For instance, identifying the reasons for machine failure when failure rates are low is a challenging combinatorial optimization problem in advanced manufacturing.[11] Finding the cause of failure quickly is important, because downtime can be costly. If quantum computing can speed up the process of determining why a manufacturing process failed, it could be valuable even in settings where classical approaches could eventually find the same reason for failure.

Discover better materials. The timeliness and quality of quantum computing solutions should also improve the efficiency of R&D processes that lead to new materials and medicines, because they reduce the cost and quicken the pace of discovery relative to classical techniques.

In materials design, computers already aim to simulate the complex behavior of constituent atoms and molecules and reliably predict the structure-property relationships of molecules. In typical applications, however, classical computers face significant limits on the size of molecules they can simulate. Even simulations involving the smallest molecules are computationally intensive, and the addition of even one atom or electron can make a classical simulation drastically slower. This renders many avenues of computer-aided design unavailable for the larger molecules that are of interest to the pharmaceutical, chemical, and materials industries.

Greater computing speed confers the ability to simulate larger and more complex molecules in a practically useful time frame, and quantum computers are poised to make a significant impact in this area.[12] They are believed to be able to provide speedups for the calculations required to predict the electronic structure of atoms and molecules, although the precise nature of these speedups is currently a matter of intense debate within the scientific community.[13]

Almost any business problem involving complex trade-offs could be well suited for quantum computers.

The Enduring Value of Quantum Advantage

Recent claims of quantum advantage may have no commercial application — and thus no quantum *economic* advantage — but they are nonetheless important because they establish the possibility that quantum computers can perform certain tasks that classical computers cannot.

The application of Shor's algorithm is perhaps the most frequently referenced example of how quantum advantage might affect society. American mathematician Peter Shor, who recently won science's most lucrative prize, the Breakthrough Prize in Fundamental Physics, demonstrated that a quantum computer could factor a large integer in cases where classical computers could not.[14] A sufficiently large quantum computer could factor these larger integers in days or less, whereas a classical computer might need more time than it would take for the sun to run out of hydrogen.[15]

While this might sound abstract, the difficulty that

Gaining an Edge When Time Is Money

IMAGINE THAT A VALUE-AT-risk calculation could be completed in seconds as opposed to hours. How would that change an investment decision in real time? The financial advantage of informing investment decisions in near real time is a straightforward example of potential quantum economic advantage in a high-stakes application.

Quantum speedups would be valuable for a wide range of applications in the financial sector. Banks often use value-at-risk calculations to estimate the likelihood and size of potential losses.[i] These calculations can involve a tool called Monte Carlo simulation to run a large number of scenarios with numerous factors to model explicitly. "Quantum" Monte Carlo may help speed up these processes, which can otherwise be time-consuming.[ii] This may be particularly important in times of extreme market volatility.

Monte Carlo simulation is also used in the pricing of complex financial derivatives. Trillions of dollars in derivative contracts are traded every year for a variety of purposes, including hedging risk and enabling speculation. Most of these trades are for straightforward contracts whose pricing can be determined dynamically with easily calculated formulas. But pricing for more complex derivatives often requires a simulation that can take minutes, hours, or even days on a classical computer. A quantum speedup could enable faster calculations and open new growth opportunities in a market that is already worth billions of dollars.

classical computers have in factoring very large numbers is actually what enables modern encryption. The relative ease with which quantum computers could theoretically perform the calculations involved in decryption provides an example of where we expect clear-cut quantum advantage to exist. If a quantum computer could implement Shor's algorithm, then much of the information encrypted in the past could be decoded — and that includes a great deal of encrypted data that has been stolen from organizations in cyberattacks.

This threat is remote right now, because the quantum community is years away from building fault-tolerant quantum computers large enough to use Shor's algorithm to break codes. But it warrants the attention of managers in almost all industries, who will eventually make up a large market for new, quantum-robust encryption standards. Here, quantum computers' ability to generate random numbers can play a role in supporting more advanced cybersecurity defenses.

Quantum computers are probabilistic, which means they can generate truly random numbers.[16] Their classical counterparts, in contrast, are deterministic and thus can generate only pseudo-random numbers. However, even when a quantum computer can do something with a clear practical application that a classical computer cannot do, business leaders must still weigh the trade-offs. In some cases, the classical approach may be deemed good enough, limiting the organization's incentives to switch to quantum. This may be the case with some other potential applications for quantum random number generators (RNGs), such as in the lottery and casino gambling sectors.[17]

Lotteries select winning numbers either electronically or physically, such as by drawing numbered balls from bins. The resulting numbers are not truly random. Because the process is deterministic, it would be possible for someone to predict the numbers if they knew something about the underlying process that generated them, or to manipulate the process to generate certain numbers.

While such manipulations have indeed occurred, lotteries will probably not abandon their current processes anytime soon, despite what appears to be a clear argument for using quantum computing. First, lottery fraud through manipulation of the number-generating process is rare, perhaps due to the significant costs of getting caught, strict rules against insiders participating in lotteries, and the existence of powerful analytical tools to detect fraud. Second, in the absence of fraud, pseudo-RNGs yield results that are often indistinguishable from their quantum counterparts. While it may be theoretically possible to predict the outcome of a lottery before drawing balls from multiple bins, it is practically infeasible to do so. Lotteries thus have little incentive to switch to quantum machines. Managers confronting similar cases where quantum computing provides a capability that is entirely lacking in classical computing will likewise need to weigh the relative costs and benefits of the optimal versus the good-enough solution.

Preparing for Quantum Computing in Business

To fulfill its promise and create new value and new commercial opportunities, a quantum machine does not have to accomplish a currently impossible task. It only needs to accomplish something useful. That time is coming, as billions of dollars in investments from venture capitalists, major tech companies, and national governments fuel rapid improvements in quantum computers that will make them more efficient than classical ones.

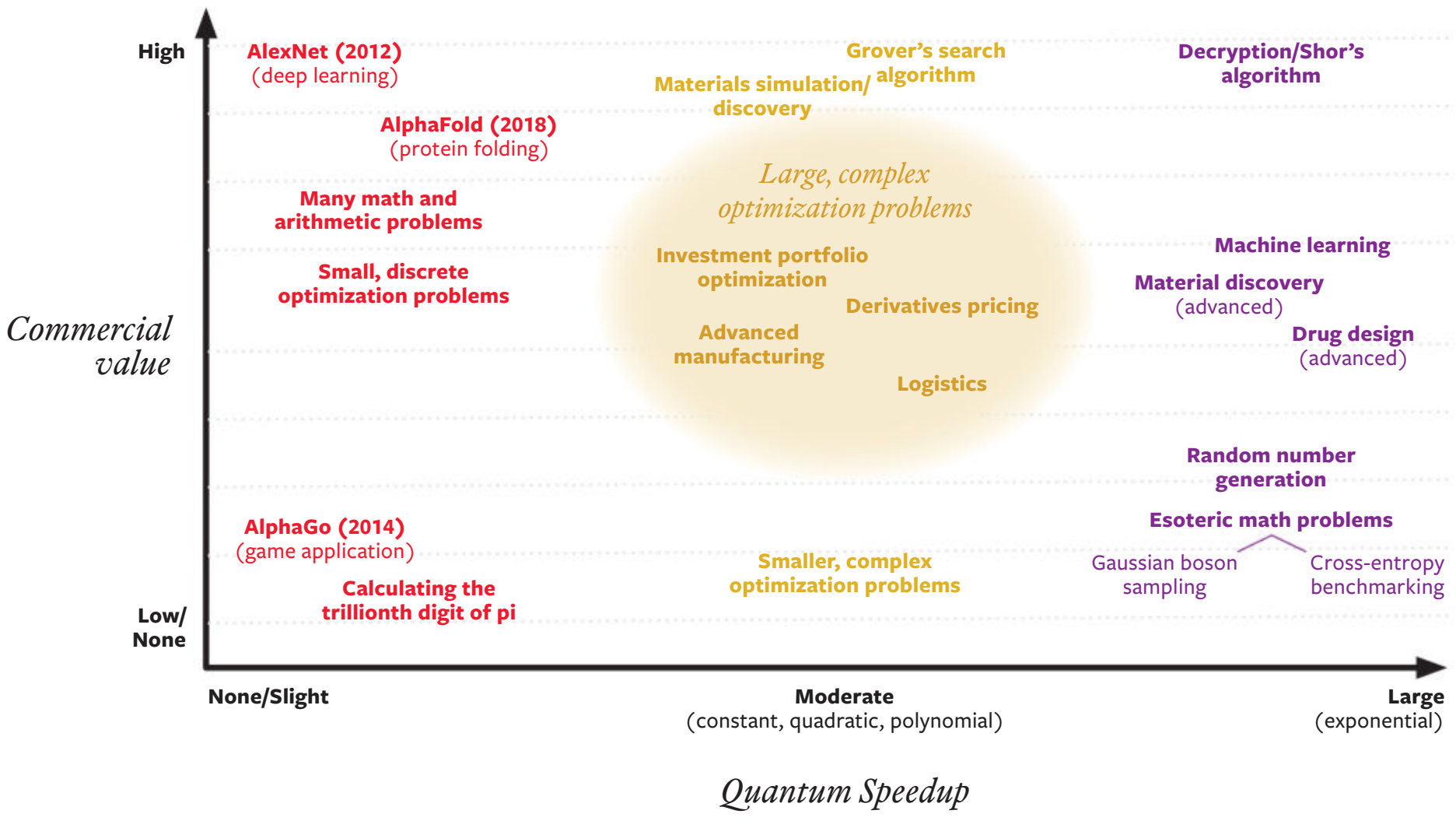
The consensus among most government and industry players seems to be that large-scale fault-tolerant quantum computers almost certainly won't appear before the end of this decade. Although it may take years for commercially relevant quantum computers to exist at scale, business leaders can already take several steps to prepare their businesses for this era.

Make a list of your "If we could only ..." or "What if ...?" challenges. Most businesses have such daunting challenges but rarely address them because they are too resource-intensive and those resources have better short-term uses. The speedups and alternative solutions from quantum computing can make the transformative solutions to these problems feasible. What elements of your business are constrained by combinatorial optimization? And how much would a solution be worth to you?

Help your organization become quantum ready. We anticipate that the impact and scale of commercial applications will accelerate rapidly once fully fault-tolerant quantum computers emerge. Organizations have several ways to prepare themselves. Companies with a higher likelihood of lucrative applications — financial services companies, pharmaceutical manufacturers, and makers of specialty materials — can

Landscape of Quantum Economic Advantage

The diagram below shows computer algorithms and applications ranked by their potential for quantum speedup, and their estimated commercial value. Large exponential speedups to date have been demonstrated on applications with no commercial value. Applications with a moderate quantum speedup but high commercial value have a good chance of showing quantum economic advantage.



Experimenting with quantum computing today will give companies a first-mover advantage as this emerging technology comes to market.

invest in hardware and software and develop a network of experts. Other organizations can familiarize themselves with the basics of quantum computing, connect with academics, and start to train team members.

Start experimenting now. Companies can already allocate a portion of R&D resources to experiment with near-term quantum hardware. They can set up problems in ways the computers can understand, even if existing hardware might not allow them to capitalize on those opportunities yet. These investments are important to the ongoing development of the technology: Quantum computing will not scale solely through academic research.

THE STARTUPS WE HAVE WORKED WITH IN the Creative Destruction Lab at the University of Toronto's Rotman School of Management have already achieved short-term benefits from experimenting with quantum — for example, by creating innovations that have led to new materials. The long-term benefit from experimenting with quantum computing today is that a company will be prepared when sufficiently coherent, fault-tolerant quantum computers exist at scale. Those organizations will have a considerable first-mover advantage and be well positioned to capture new opportunities as this emerging technology comes to market. ■

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Reimagining HR for Better Well-Being and Performance

Organizations must rethink historical divisions between talent and benefits groups if they are to more effectively help workers develop the psychological skills to thrive now and in the future.

By Gabriella Rosen Kellerman and Martin Seligman

HUMANS HAVE BEEN challenged to adjust to new ways of working since the first farmers abandoned the hunter-gatherer lifestyle. But the demands of work today exact a high price on employee well-being, as workers strive to cope with the rapid pace of technological change, the overnight disruption of entire industries by new upstarts, and the rise of uncertainty and volatility in every global market.

Roughly half the U.S. workforce struggles with burnout.[1] Seventy-six percent see workplace stress negatively impacting their personal relationships.[2] Excessive stress at work accounts for $190 billion in health care costs each year, plus hundreds of thousands of unnecessary deaths.[3] And in the past three years, the stressors and disruptions of the COVID-19 pandemic have spun a rising storm into a full-on tornado — and made employee well-being an urgent priority for many business leaders.

The good news for organizations that want employees to thrive is that behavioral science has provided new insights and strategies that can

Rafael Lopez / theispot.com

help support mental health. (See "What We Need to Flourish at Work," p. 40.) But in order for managers to take full advantage of these insights and help individuals develop key psychological strengths, many organizations will need to reconsider Human Resources and Benefits functions that in some cases still carry the legacy of a bygone industrial era.

One of the challenges organizations face is *structural*. The two HR functions most closely connected to employee thriving — Benefits, and Learning and Development — evolved from two distinct historical traditions, and each remains somewhat siloed today. We'll show why we believe that this two-pronged structure makes it challenging for corporations to tackle thriving holistically, and why each approach is insufficient on its own. We'll also examine additional organizational barriers to flourishing, before offering solutions.

Helping the Suffering: The Social Welfare Tradition

The harsh conditions of industrial factory work created a steep rise in alcoholism in the late 19th and early 20th centuries and brought related social ills. Business owners like Henry Heinz (founder of the eponymous condiments company) viewed their employees as wards under their care, and they sought to help and protect them; the HR function that grew out of this paternalistic tradition today goes by the name of Benefits. A vice president of Benefits (or Benefits and Total Compensation, if they also oversee pay scales) usually reports to the company's chief human resources officer (CHRO), who in turn reports to the CEO.

Historically, there have been two types of services administered by the Benefits team that are most relevant to employee emotional well-being: health plans and the employee assistance program (EAP). The latter arose out of sobriety programs but came to encompass organizational support for an ever widening circle of psychological ills beyond substance abuse. Modern EAPs offer counseling for depression, anxiety, parenting and relationship challenges, and workplace violence. Ninety-eight percent of large companies offer their employees access to an EAP, which typically includes free counseling and referrals to mental health care.[4]

Despite their widespread availability, EAPs are woefully underutilized, tapped by just 4% of workers.[5] Originally designed as private, confidential services used in the shadows, EAPs still carry too strong a stigma, and employees fear judgment or even penalties for accessing mental health services through their employer.

Benefits teams also offer employees access to mental health benefits through their health plans. Mental disorders that are serious enough get referred from the EAP to a therapist or psychiatrist within the plan. Clinical health care accounts for the vast majority of a corporation's spending on all things mental health. Insurance covers therapy, psychiatry, inpatient psychiatric treatment, and psychopharmaceuticals. Many EAPs even sit within the health plan umbrella and are administered by the same parent company.

All of this means that employees have come to regard EAPs and mental health care benefits as programs for people who are already in pretty bad shape. Employees are grateful to have access to these services, but they tend to interpret any employer offerings labeled "mental health" as a euphemism for mental illness. As a result, despite immensely creative, committed efforts and increasingly diverse investments, it can be difficult for Benefits teams to change the employee perception that EAPs provide only remediation services rather than helping employees to thrive.

Learning and Development: Upskilling the Able

The history of the Learning and Development function, like that of Benefits, begins with the Industrial Revolution. Before then, workers learned their trades on the job or in one-on-one apprenticeships. But with industrialization, factories needed to keep up with such an unprecedented pace of production that they began to offer training to larger groups, with classrooms often located right off the factory floor.

The need to onboard large numbers of people quickly and efficiently dovetailed with the principles of *scientific management* then being popularized by mechanical engineer Frederick Winslow Taylor. Machines had already greatly increased the efficiency of production; the next logical step, Taylor argued, was to increase the efficiency of the humans operating the machines. Through empirical study, best practices could be developed to reduce wasted effort and maximize productivity. Taylor's ideas gradually morphed into some of the functions owned by modern HR's Learning and Development team, or L&D. L&D is responsible for employee training, upskilling, learning, and professional growth in service of performance and productivity. A vice president of L&D — sometimes also called a vice president of Talent,

or Talent and Development — usually reports to the CHRO and is a peer to the vice president of Benefits.

Given Taylor's professional background, it's unsurprising, though unfortunate, that his methods were mechanical in nature. He prioritized the findings of industrial engineering, business process management, and logistics over those of psychological science. In treating people like a type of machine, Taylor ignored the deeply human aspects of work. Despite its shortcomings, his system has remained influential for decades, with lasting consequences; much corporate training today continues to ignore how human beings actually learn and change.

For example, even in Taylor's time, psychologist Hermann Ebbinghaus had demonstrated that without repetition, we forget almost everything that we are taught in a single go — up to 90% by the end of the month. But the majority of business training sessions are delivered as long one-off sessions instead of multiple shorter sessions repeated over time. In addition, we know that no two learners are the same, in terms of their strengths, their levels of motivation, and their funds of knowledge. However, most corporate training takes a one-size-fits-all approach that will bore some, go over the heads of others, and fail to inspire the majority, who are not yet ready to learn.

Harvard Business School professor Michael Beer has coined the phrase "the great training robbery" to describe the enormous amount of corporate spending wasted on training that doesn't work. Up to 90% of corporate learning initiatives suffer from these design flaws, which minimize their effectiveness. Corporations in G20 countries spend roughly $400 billion on these programs annually.[6] Call that $360 billion up in flames.

What We Need to Flourish at Work

OUR STUDIES OF THRIVING AT WORK, BASED ON DATA FROM hundreds of thousands of workers in virtually all industries around the world, have identified five psychological powers as the most critical for workplace thriving in the 21st century.

A handy acronym you can use to remember them is **PRISM**.

- **P** — **Prospection:** Foresight, the ability to imagine possible futures and the meta-skill positioning us ahead of change.
- **R** — **Resilience and cognitive agility:** The bedrock of thriving through change.
- **I** — **Creativity and innovation:** Our uniquely human gift, restored to workplace prominence today after its assembly-line decline.
- **S** — **Rapid rapport to build social support:** Building trust to bridge differences and achieve the connection we need to flourish.
- **M** — **Meaning and mattering:** The motivation to propel us forward.

Taken together, they are the five components of the mindset that allows us to anticipate change, plan appropriately, respond to setbacks, and achieve our full potential.

The Challenges of a Disjointed Approach to Employee Growth

In many modern HR departments, the Benefits and L&D functions exist as partially or fully siloed subunits, with one focused on employee health and the other on performance. But in today's high-pressure workplaces, our emotional well-being and professional development needs are intimately intertwined. As we battle extraordinary uncertainty, the skills required to manage stress are the same skills that enable sustainable career growth. The modern professional cannot succeed in leadership without emotional regulation, for example, any more than they can conquer anxiety without addressing career turbulence. And yet so many of today's most pressing workforce issues — like burnout, loneliness, and belonging — sit squarely at the margins of two separate functions.

Forward-leaning Benefits and L&D executives, including many whom we are privileged to have partnered with and learned from in our research, work hard to bridge this gap through frequent communication and collaboration. They report to CHROs who likewise understand this dynamic and model collaboration at the top.

At many enterprise companies, however, the siloing of Benefits and L&D remains a significant challenge to a holistic approach to thriving.[7] In 2017, one of our authors (Gabriella) researched this gap across some of the largest companies in America. Her goal was to understand how each department thought about this overlap of their work with the other's. The answers were hard to come by, because so often these functional counterparts knew little about each other's team.

Occasionally, such division can even produce territoriality. For example, today all EAPs include

some form of stress counseling; in addition, some Benefits teams invest in stand-alone stress management or resilience training solutions. This makes sense, because people with mental health conditions typically struggle to cope with stress and often have poor resilience. We also know that building resilience is good for productivity and retention, and that managers and leaders disproportionately influence the well-being of their teams. For these reasons, it makes equal sense for leadership to receive extra training in this area — a type of managerial training that would sit with L&D.

Shortly before the pandemic, the L&D team at a *Fortune* 100 company brought their CHRO a proposal for resilience training for leaders. When the Benefits team found out, they reminded the CHRO that they had already implemented a resilience program to lower stress. Adding another program could confuse people, they argued. Rather than bringing everyone to the table, the CHRO let the idea go, with the result that leaders didn't get access to the more robust program. In retrospect, there would have been no better time to work on building leadership's capacity to help their teams weather adversity.

A silver lining of the COVID-19 pandemic that we observed was increased collaboration across the aisles of HR. The pandemic loosed a tidal wave of psychological needs for workers and their families, sending HR teams around the world scrambling to help, often sacrificing their weekends in service of their workforces. For the first time, we found ourselves on video calls with both the vice president of Benefits and the vice president of L&D at the same time. Down in the COVID-19 foxhole, holding the line against emotional chaos, their teams had found in each other sorely needed allies. This chaos was the purview of L&D, because it was affecting the performance of every employee — but it was also the purview of Benefits, because it carried deep psychological risks.

New challenges to collaboration, however, surfaced in this climate. Benefits teams and L&D teams have different metrics of success that map to their organizational responsibilities. Benefits teams are expected to tightly manage health care spending and often employ actuaries for this reason. From their perspective, a thriving-related program is effective if it decreases the number of people who need to see therapists or psychiatrists. L&D departments, in contrast, don't even have access to health care billing records, let alone track them. The metrics that matter most to L&D include productivity, innovation, and employee retention.

Ideally, this divergence should produce a creative tension that yields a more holistic design. One can imagine the vice president of Benefits and the vice president of L&D putting their heads together to codesign and cosponsor solutions that will achieve the aims of both teams. Thriving offerings *can*, in fact, improve both health care spending and performance metrics, but only if they are designed to do so from the start. Unfortunately, in practice, it's often faster and simpler for the two teams to resolve their divergence by picking one or the other function to take the lead on a particular initiative. Whichever group ends up funding a given program then naturally dominates its design and metrics of success. When we privilege one type of outcome over the other — call it surviving versus thriving — the program's focus narrows accordingly, along with the benefits to the organization.

Thriving offerings can improve both health care spending and performance metrics, but only if designed to do so from the start.

The Proactive Organization

Both EAPs and corporate training programs represent post hoc responses to already urgent needs. This reactive posture stems from their legacy. However, far and away, the most effective type of intervention is to prevent individuals from developing diseases or problematic behaviors in the first place, known as *primary prevention*. This approach works best and costs the least — as long as we have the courage to act now, based on very likely future outcomes. Corporate leaders must always be thinking several steps ahead about human capital, understanding how the changes to come will affect their workforce, identifying the skills that will calm turbulence, and training their people accordingly.

In the realm of physical health, Benefits teams lead the way in future-minded thinking. They work to ensure that health plans cover all government-recommended preventive care services, such as immunizations. They look to experts and chief medical officers for guidance on the latest trends in prevention and health promotion. They advocate for offerings like gym memberships to help employees

avoid heart disease, or smoking-cessation coaching to prevent lung cancer. In so doing, they lengthen employees' lives and lower health care costs for both individuals and the corporations — a true win-win.

In the realm of psychological thriving, the primary prevention approach is usually thinner and harder to come by. Why should that be the case?

The answer is multifaceted. We've already seen one part of it: The holistic perspective needed to enable a proactive stance is challenged by the split between managing the costs of illness (Benefits) and managing the metrics of growth (L&D). Dividing remediation and growth can shortchange both and make it difficult to focus on building the core skills that unite them.

A second hurdle to implementing primary prevention springs from deeper-seated beliefs about human psychology. There are still a handful of influential corporate leaders who do not see employees' psychological well-being as their responsibility. Perhaps they rose up in the ranks of corporations that lacked a culture of employee support. Even if, on some level, they recognize that thriving workers perform better, they might not see a reason to change things. Some point to low EAP utilization numbers — an artifact of stigma and, in some cases, low-quality services — as evidence that employees don't want such help.

Third, there is the considerable challenge of proving the return on investment in prevention programs for psychological well-being. Any HR program will require a budget, and large-ticket items like resilience coaching or innovation training ultimately land on the desk of the CFO or their deputies. CFOs speak the language of efficiency: Considering such an investment, they want to know what cost savings or other efficiency will result.

Thriving is not an efficiency sale; it's an effectiveness sale. Efficient solutions yield the same outcome more rapidly, with minimal waste. Effective solutions get us to the *best* outcomes, period. Enabling employees with skills like rapid rapport (the ability to rapidly build trust across diverse teams) or prospection (the ability to productively imagine and plan for future scenarios) prevents bad outcomes while improving performance and retention. Seeing the chain of causality clearly requires statistical regression models, familiarity with common psychometric measures, and a decent grasp of the epidemiology of mental illness. It looks nothing like the standard business case. It's complex and, for that reason, easily dismissed as too fuzzy to merit investment.

Thriving also takes time. But the long-term gains in productivity from employee thriving will repay the investment many times over.

Short-Term Pain for Long-Term Gain

Thriving also takes time. Corporate leadership focused myopically on short-term gains will not be enthusiastic about paying for thriving. Short-termism is an enemy of workplace flourishing — and therefore also the enemy of performance, productivity, and sustainable success. But the long-term gains in productivity from employee thriving will repay the investment many times over.

One of the great ironies, of course, is that businesses already spend a ton of money on programs that are neither efficient nor effective — yet they somehow get funded anyway. Remember that $360 billion up in flames? How did any of that make it past the CFO? This level of investment suggests that most corporations believe they should be doing *something*. That's the good news. But the key players involved in approving major investments — including Procurement, Finance, Legal, and even many in HR — usually don't have the expertise to determine which offerings will move the needle. It's not easy to sort through what is actually evidence-based as opposed to what just sounds good on paper. The natural inclination for a nonexpert is to fund the cheapest option with the longest list of features. In the absence of the ability to weigh the performance and well-being impact of one offering over another, bells and whistles often stand in for value.

This leads us to the fourth and final hurdle to the proactive approach to employee thriving, which is apprehension about translating behavioral science research into practice. Do we really know enough to have a sense of which psychological skills will be most vital for success both today and in the future, and also lower the risk of psychological illness? Is the science precise enough to guide investment?

We believe that the answer to these questions is a resounding yes. We have more than 30 years of data documenting the relationship between improved psychological well-being and lowered risks of myriad mental and physical illnesses, and detailing the interventions that work. On the applied-science side,

our industry is on its third or fourth generation of novel evidence-based interventions, platforms, tools, and services to support employee growth and well-being. Our research has identified the five key psychological skills that workers will need in order to succeed in our increasingly volatile, global, automated industries. Organizations may not be able to tackle all these challenges at once. But we have all the evidence we need to get started responsibly.

All the hurdles we've listed above are surmountable, as we can see from the experiences of those leading corporations that set their sights squarely on thriving itself. Such corporations work to bridge the gap between Benefits and L&D through collaboration at the highest levels of leadership.

At Hilton, senior L&D and Benefits leaders partner to think holistically about the support their people need most, working backward from the common desired outcome of employee thriving. As a result, the company is consistently rated one of the best places to work globally, regularly beating out higher-margin businesses for these accolades. Hilton's success demonstrates that it's not about spending more on your employee experience. There's no need for perks like on-site putting greens or dry cleaning — it's about spending more wisely. In the words of Hilton CHRO Laura Fuentes, "To me, it boils down to creating not a work experience or an employee experience but a human experience that makes people feel like they are seen, they are welcome, they are heard, they will be taken care of, and they can take care of their families and loved ones, and that they belong to something greater than themselves."[8] A vision that bold necessitates collaboration across functions.

In other organizations, it may not be enough to leverage existing structures and processes, in which case an even more radical approach may be called for. This approach would structurally unify those responsible for worker thriving, including large parts of Benefits and L&D, into a single unit we'll call the Employee Thriving Team (ETT). The ETT would be responsible for the physical and emotional health, personal growth, and professional growth of each employee. Diverse stakeholders, from investors to customers to senior leadership, would rely on the ETT to keep the company's most valuable asset — its people — at the ready to meet the unforeseen challenges to come.

The ETT's leading indicators of success would include measures such as Marty's assessment of positive emotion, engagement, relationships, meaning, and accomplishment (PERMA), and other metrics indicating levels of resilience, innovation, productivity, and prospection.[9] Its major investments would be reviewed and approved by decision makers fluent in the behavioral sciences, with a focus on primary prevention. Continued funding for any program would be contingent upon measurable improvement in the ETT's most important metrics: employee retention, performance, and health care costs.

THIS SIGNIFICANT STRUCTURAL TRANSformation would also require careful thinking about which functions that live under the umbrellas of Benefits and L&D today would need to be carved out in order to preserve this team's focus. And such a substantial rewiring of HR — either by way of restructuring or through close and frequent collaboration between L&D and Benefits — requires the buy-in of not only the CHRO but also the CEO and even the board of directors. These leaders need to share a common vision of workforce readiness that honors employee thriving and agility as the company's strongest bulwark against the accelerating uncertainty of the future. ■

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Level Up to Strategic Data Sharing

Your data assets are key to developing new value for your customers and giving you clout in digital ecosystems.

By Barbara H. Wixom, Ina M. Sebastian, Robert W. Gregory, and Gabriele Piccoli

MOST ORGANIZATIONS have learned how to share data tactically. They've put technical infrastructure and processes in place so that they can easily transfer data when necessary to comply with regulations, execute transactions, or provide a service. But far fewer companies have begun to explore the opportunities created by a more strategic approach to data sharing.

In today's digital economy, business leaders need a data-sharing strategy to pursue novel digital solutions — and move in new business directions. *Strategic data-sharing practices* allow an organization to share data quickly and with control for specific opportunities with specific partners, and to share it repeatedly, with an emphasis on value creation. As strategic data-sharing practices mature over time, purposeful, fast, and creative data sharing becomes the basis for business model innovation and the resulting payoffs.

Energy management and industrial automation company Schneider Electric is a case in point. It uses its internet of things platform to share data with its business customers in order to discover and deliver energy management solutions.[1] In 2016, company leaders saw IoT as a significant opportunity to develop new products and services based on the monitoring and analysis of connected assets. Along with the data-sharing platform, they developed a tool to collect both structured and unstructured data about the company's products in use at a customer site, drawing on sensor data and maintenance logs. Using a dynamic risk monitoring algorithm, the tool detects operating risks and their sources, and it allows facility managers who purchase the product to manage the performance of assets themselves or use a Schneider Electric service center.

While most pilot sites kept the data and its analysis within their internal systems, early adopters who were willing to share data in the cloud got more value through features that derived additional insights by analyzing data from multiple pilot sites and/or customers.[2] For example, Schneider Electric has reported that customer Hilton Hotels & Resorts has achieved 14.5% energy savings since 2009, based on monitoring real-time consumption and pricing data — a key outcome, given that energy is Hilton's second-largest operational cost after labor.[3] By 2021, Schneider Electric's business related to digital solutions and the EcoStruxure IT platform (comprising software, controls, connected products, and services) generated more than 50% of the company's total revenue.

Strategic value can also arise from sharing data within an innovation ecosystem. Health insurance provider Elevance Health (formerly Anthem) shares data with academics, researchers, and other partners to identify ways for AI models to inform complex health care problems. In 2019, Anthem's innovation team assembled 12 years of de-identified medical claims, prescription claims, and lab data associated with 45 million individuals. Then the company set up a data-sharing platform to provide sandbox development access to the curated data sets for AI model training. By August 2021, nearly 50 vetted partner organizations comprising more than 600 developers and researchers had generated over 30 projects addressing wide-ranging health care problems. They included improving the management of diabetes, predicting breast cancer risk, treating heart disease, and reducing avoidable hospital readmissions. On average, about five projects made it into production each year from 2019 to 2021. C19 Explorer, a project launched in 2020 after two months of sandbox development, became one of Anthem's most-used COVID-19 resources. The sandbox has been moved to Elevance's Carelon service subsidiary and is now branded as Carelon Digital Platforms.

The examples of Schneider Electric and Elevance Health illustrate the benefits of having strategic data-sharing practices that help organizations cocreate with customers, engage in novel partnerships, and pursue ecosystem opportunities. Since 2018, we have studied digital initiatives at 30 organizations that were engaged in strategic data sharing. (See "The Research," p. 46.) We identified four key practice areas that these organizations focus on to advance this capability:

1. They invest in data management practices that increase data liquidity, by identifying strategic data assets and making them usable, available, and combinable.

2. They reduce friction via service platforms and oversight practices that facilitate the fluid exchange of data assets, by implementing flexible controls and transitioning from bureaucratic, manual governance approaches to automated, repeatable oversight processes.

3. They set up win-win relationships with partners, using policies and processes to enable trust and collaboration even in the face of power differentials.

4. They proactively manage innovation initiatives as value-realizing projects, set specific revenue goals, and assign them commensurate resources and managerial attention.

Let's look at each of these areas in more detail.

Increase Data Liquidity

Data assets must be easy to reuse and recombine.[4] Highly liquid data assets are accurate, standardized, secured, and generally fit for use. Organizations create highly liquid data assets by drawing on data management practices

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— foundational ones like master data management and data quality management, intermediate practices like data standardization and data integration, and advanced ones like using synthetic data and data obtained from external sources. Because these practices require time, money, and skills, organizations should apply them to data assets with strategic value.

PepsiCo has shared its highly liquid data assets about product sales and niche consumer needs with its retail customers.[5] These data-sharing efforts were built on a foundation established in 2012, when the company adopted data management practices for cleansing, standardizing, and consolidating data from across its business silos. Its global IT unit established a data taxonomy that reconciled the different product names and formats used by different country operations around the world; this allowed data from global operations to be mapped into a single report on worldwide product sales. The IT unit had also adopted master data management practices and housed product sales data in a single enterprise data warehouse, later modernized into a cloud-based data lake. Finally, it established data integration routines and tools that offered the ability to tie PepsiCo product sales to other data assets, including the company's consumer data asset, which covers anonymized shopper behavior on 110 million U.S. households. This service gave retailers insight into demand for PepsiCo's products or particular categories, even at specific stores, and it suggested sales and marketing improvements. Today, PepsiCo uses these data assets to fuel a data service for its retailers.

Even companies in highly regulated environments can make their data more readily accessible. Elevance Health's team worked for close to a year to develop data management practices that would help the company increase data liquidity while meeting data privacy and security requirements that would properly secure its patient data assets.[6] The company had to protect the regulated health data from being used in ways that could unintentionally compromise privacy or reveal sensitive information. It began by de-identifying personal, confidential, and proprietary data as required by law. For example, the team altered birth dates and used only the first two digits of postal codes for member and claims data. It replaced sensitive data with tokens — random strings of meaningless data — so it would be useless in the wrong hands. It also created and used synthetic data when possible.[7]

Next, the Elevance team worked to ensure that the data assets could be understood by and relevant for innovation partners. It created a public data dictionary that described the technical and semantic characteristics of the data assets.[8] It also tested the data assets and adjusted them to be more useful for AI model training. To do this, it drew on nearly 4,000 different predictions about its consumers' health based on the complete data held internally and then used those findings to benchmark the accuracy with which the new data sets could make similar predictions. Once the internal users were satisfied with the predictive power of the digital sandbox data assets, the team felt ready to offer the assets for strategic data sharing.

Reduce the Friction That Slows Data Sharing

Organizations must reduce friction associated with gaining permission and data-provision logistics if data of strategic value is to be shared in a timely way. In most organizations, data sharing involves completing forms, waiting for someone to approve the request, and working with IT to add a user to a system and set them up with new software and training. Such friction can act as a check on unacceptable data use, but when it comes to strategic data sharing, friction slows discovery and value creation. Organizations with successful strategic data-sharing initiatives exploit flexible controls and advanced technology to transition from bureaucratic, manual governance approaches to automated, repeatable oversight processes.

Innovation team leaders at Australian financial services company ANZ envisioned a highly governed, secure place where vetted partners could perform analyses on de-identified banking data assets. The team wanted to reduce friction by creating a standard framework that could be used to onboard data-sharing partners in a consistent and efficient manner. With help from a third-party provider, ANZ identified contractual

THE RESEARCH

- **The authors hosted a Data Research Advisory Board discussion at the MIT Center for Information Systems Research on interorganizational data sharing in 2018, working with 91 global data leaders to identify contemporary data-sharing practices.**
- **They interviewed 34 executives representing 30 companies in diverse industries, including consumer packaged goods, finance and insurance, government, health care, information, operations, and travel, from 2019 to 2021.**
- **Based on the interviews, the authors developed the concept of strategic data sharing and the four practice areas that help organizations establish secure, governed, and scalable data sharing.**

Essential Capabilities for Strategic Data Sharing

DATA MANAGEMENT practices create data assets that are:
- Usable (accurate, current, complete)
- Available (secured, shareable)
- Combinable (standardized)

DATA PLATFORM AND OVERSIGHT practices reduce friction in data asset exchange via:
- Permissioning (automation)
- Provisioning (self-service)

PARTNERING practices motivate partners to cocreate novel solutions by establishing:
- Joint goals
- Mutual respect
- Mutual benefits

INNOVATION MANAGEMENT practices improve chances of successful deployment and payoff by establishing:
- Accountability for results
- Change readiness
- Operationalization

parameters that could be adjusted to manage distinct obligations regarding development standards, intellectual property rights, and data use. It then used the provider's secure technical platform to control data access for partners after contracts were set up. ANZ built out a process with developmental stage gates (such as time-bound access, customizable hardware setups, data curation plans, and approvals) to allow for adjustments and ensure proper oversight as a project unfolded and new data needs arose. The combination of parameterized contracting, a dedicated secure data exchange platform, and a stage-gate process allowed ANZ to create a repeatable onboarding process despite variations in data-sharing partners and purposes.

Create a Level Playing Field

Organizations adopt policies and processes for collaborating with partners so that they can cocreate novel digital solutions even in the face of power differentials. To do this, they track shared value, create ways to collaborate that allow people to solve problems on the fly, gain a comprehensive understanding of stakeholder needs, treat partners like customers, and prioritize clarity when developing joint goals. All these practices helped the organizations we studied establish trust with partners and generate excitement about future opportunities.

Access to PepsiCo's strategic data assets appealed to retailers because it promised visibility into shopper behavior on a broader scale.[9] The company evaluated each potential retail partner for its willingness and ability to pursue a joint goal and make any organizational adjustments that might be required to execute the plan. Teams from PepsiCo and each retailer identified data-driven ways to spur growth that would be mutually beneficial. PepsiCo teams used proofs of concept and testing to validate the effectiveness of proposed solutions. They were able to determine the effects of changes and prioritize retailer goals such as profitability when formulating solutions, even if that meant advising against more shelf space for the company's products.

As PepsiCo's goals became more partner-oriented, its success measures shifted from reflecting the progress of PepsiCo and its products to reflecting a triple win for the shopper, the retailer, and the company. Collectively, these practices positively influenced PepsiCo's reputation as a partner: For the past six years, it has claimed the top spot among manufacturers in Kantar's PoweRanking report, based on annual surveys of retail business partners.[10]

Manage Rollout and Value Capture

Digital solutions cannot pay off if they are not used. Organizations that succeed in strategic data sharing actively shepherd initiatives from ideation to delivery, with results in mind. They do this by drawing on innovation management practices that establish accountability for goals, create readiness for change, and ensure that solutions are deployable.

Elevance Health's innovation team selected partners purposely using both an inside-out process (the team created a few priority problems and scouted for partners who could help solve them) and an outside-in process (the team established a clinical design board that reviewed incoming partnering requests). The team established technical standards for solutions so that they could be easily integrated into the corporate digital platform. At the start of each project, the team created a deployment plan that laid out an integration strategy for the project and identified the group within the company that was committed to deploying the solution. In 2021, a formal implementation team was created to work with partners and ensure that solutions became integrated into the

company's business activities and achieved their desired impact.

Schneider Electric, too, was intent on ensuring that its EcoStruxure products paid off. The company crafted a framework called the Digital Flywheel that tracks the type and amount of value that a product generated. The Digital Flywheel has four key components, representing the four parts of the EcoStruxure system: Connectable Products, Edge Control, Digital and Software, and Field Services.[11] The company captures and tracks financial performance associated with each component.

How to Become Great at Strategic Data Sharing

Adopting data-sharing practices — and becoming great at them — takes time. And as we've shown, strategic data sharing requires some advance work on data management foundations. Our research indicates that organizations have two approaches that they can take to begin building their strategic data-sharing muscle.

The first way is to identify and pursue an appealing strategic sharing opportunity with small scope and clear intent. For example, you can try a pilot project with a trusted customer and then capture what you've learned before trying another. Over time, you will strengthen your organization's ability to increase data liquidity, reduce any friction from sharing, set up win-win value propositions, and improve the likelihood of solution deployment as you adopt and learn from new sharing practices. PepsiCo worked with large retailers to codevelop solutions; when the team believed that a custom solution could be scaled cost-effectively to solve other retailers' problems, it converted the solution into a turnkey application, often with a new user interface.

The second approach is to focus on becoming great at sharing data inside the organization, by maturing your data practices and developing a readiness to embrace future strategic data-sharing opportunities when the time is right. For example, you can revamp internal sharing to gain immediate efficiencies for employees who are heavy users of data. Fidelity Investments did this in 2019, when it initiated a four-year data re-platforming program to rationalize 100-plus data warehouses and analytics stores into a common analytics platform. Fidelity leveraged many of the same practices that enable strategic data sharing, such as preparing usable data assets and protecting them from unacceptable use. By 2021, Fidelity's data scientists were spending more time on business problems and models than on gathering and cleaning data. The company also reduced the effort required to gather data to onboard new analytics use cases by 60% to 80% and improved its ability to tap external data.[12] Fidelity first focused on internal sharing, with an internal marketplace in which local data owners contributed to strategic data assets by conforming new data to the enterprise taxonomy. Internal consumers could take data from multiple internal producers, combine the data, and build local solutions, as long as they followed core platform rules.[13]

So choose a route to develop your strategic data-sharing capabilities, and get started — it's the path to maximizing long-term payback from your digital investments. You'll be better poised to develop new business models, have more options for creating value for your customers, and be a more skillful player in digital ecosystems, whether as participant or orchestrator. ■

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MITSloan Management Review

Mining Underground Innovation

Many R&D employees proactively engage in innovation efforts not sanctioned by their managers. Organizations must find ways to surface these projects so that they can gain broader benefits.

By Jeroen P.J. de Jong, Max Mulhuijzen, and K. Venkatesh Prasad

IT IS HARD TO STOP INNOVATORS FROM innovating — as we can see from the long history of skunkworks and unofficial side projects among R&D staff members.[1] Consider Tetsuya Mizoguchi, an executive in Toshiba's mainframe computing division, who was convinced that there was an emerging demand for lightweight, portable PCs at a time when all such devices were large desktop machines. After management rejected the idea, he went underground to develop the first laptop computer — positioning Toshiba as a leader in the new category when it debuted in 1985.[2] Laptops now outsell desktops by more than 4 to 1.

In our research at Ford Motor Co., we surveyed employees in R&D and found that from 2018 to 2021, 45% had developed projects without a manager's consent.[3] Workers have a variety of reasons for doing this work out of sight. From earlier research, we know that underground innovators may want to defer discussion until they can present their best case or avoid the pressure that comes from managers demanding results.[4] We learned that employees sometimes prefer a shortcut to solving problems encountered at work, don't want to spend time getting permission, or are simply driven by curiosity and determined to push past constraints — even if they aren't being paid for the work.

Many R&D managers view underground projects as harmless and potentially beneficial and thus do not object to them as long as employees are meeting their formal responsibilities.[5] After all, these innovations are often a good match with the organization's interests and cost relatively little to develop.

However, if the organization is to take advantage of these activities, the fruits of these projects must surface

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at some point, as Mizoguchi's did. Unfortunately, our research shows that this does not happen consistently. Managers need to better understand what different kinds of innovations to look out for and introduce mechanisms that make them more visible.

What Motivates Underground Innovation

Unsanctioned innovation projects fall loosely into three types: missionary, user, or explorer projects. (See "Three Types of Underground Innovator," p. 52.) While it's largely innovators' motivations that differentiate them, they also may employ different resources and collaborators and involve different levels of effort to disseminate the innovation. Some types tend to remain invisible, as we'll explain.

Missionary projects are initiated to change a product or company practice. Innovators who engage in missionary projects have the company's interests in mind, and so they often bring their work forward, but not until they feel that the time is right.[6] They may be convinced that their innovation is exactly what the company needs. Employees with missionary projects are highly confident about their judgment and sometimes keep working on a project even when directed to stop — a phenomenon known as *creative deviance*.[7] They may keep their idea secret until they have a convincing prototype and have mustered informal support from colleagues, rather than offering a rough idea early and seeing it get shot down. Others may prefer to work in secrecy until they have a full proof of concept, to ensure that they get full credit for their idea.

R&D workers with missionary projects often involve others along the way. They secure informal help to develop the innovation and to improve the odds of gaining support and ultimately acceptance — much like intrapreneurs and innovation champions whose work is out in the open. They are typically very aware of internal politics and adept at avoiding roadblocks. Some bypass their team leaders and bring ideas directly to senior management. Missionary innovators are always keen on mobilizing allies to create a favorable decision climate. For example, some in our sample at Ford obtained support from the head of their organization's intellectual property office to create rapid prototypes of an open-source platform as a workaround to potential roadblocks they faced in various work tasks and processes. This innovation (OpenXC) was ultimately adopted across the organization.

Employees in missionary projects are effective bootstrappers. Like all underground innovators, they work during slack time, but they also acquire extra resources from the organization. For example, one individual in our study positioned his project to apply for an internal crowdsourcing challenge in order to obtain extra time and budget to continue working on his innovation — even though the challenge was meant to surface only ideas, not projects in development. Others persuaded colleagues to spend their slack time on their project or consciously planned their prototyping during holiday breaks, when testing facilities were more available. Finally, we frequently encountered projects that were kept on the back burner to await a favorable funding climate.

Given the innovator's motivation to make an impact on the organization, eventually missionary projects will be communicated — and they consequently have better adoption rates than other kinds of underground innovation.

User projects are developed to solve an individual or work team problem. Many R&D workers see problems and decide to find a way to make a task or process easier, more efficient, or more effective. Their focus is more personal — for example, automating production of a required weekly report or a testing routine. These innovators' priority is not adoption by others but rather to alleviate their own problems or gain new functionalities for themselves.[8]

Underground user projects are often developed with the help of others, but only for the sake of prototyping solutions; such projects' developers are more secretive,

THE RESEARCH

THE RESEARCH WAS CONDUCTED AT FORD Motor Co., which funded the work and assisted with data collection.

- **The authors initially interviewed 39 R&D employees at two locations in Germany, of whom 27 had recently developed an underground innovation and four had contributed to others' projects. They were asked about their motivation, use of resources and collaborators, effort to diffuse their innovations, and observed adoption by others in the organization.**
- **Next, the authors surveyed 929 R&D workers (with a 25% response rate out of 3,703 employees) in two different countries to validate their findings and to compare underground and formal R&D projects. The survey provided data on 420 underground projects and 479 formal R&D projects.**
- **Finally, they conducted three workshops with managers, members of support staffs, and underground innovators to identify how underground innovations can be made visible in a suggestion system.**

and they involve fewer people than are pulled in on missionary projects. User innovators mainly draw on existing slack resources, some of which they carve out of their formal projects by doing a more efficient job.

User projects can be of value to colleagues facing similar problems, but their developers generally lack incentives to reveal and share their work. Some are concerned that broad acceptance by the organization will lead to others "improving" their solution to meet company standards, with the result being that it no longer solves the original problem. Others simply want to avoid the hassle of supporting their colleagues' use of the tool and being bugged for enhancements. In rare cases, people fear blowback from their managers for spending time on unsanctioned work.

Underground user projects have been observed by other researchers as well. In a telecom business, 31 out of 71 R&D workers were found to have personal pet projects. Most addressed their own work challenges, but only a few were submitted to the company's suggestion system.[9] In a study of police and military workers in Denmark, lack of support for innovation in general even led underground user innovators whose projects had improved their safety at work to keep their solutions hidden.[10]

We found that when user projects did spread, it was mostly to local colleagues. Adoption happened after chance encounters, such as when colleagues observed the innovation being applied or when the innovator ran into colleagues facing similar problems. This literally happened during coffee or lunch breaks: User innovators were more likely to share their innovation when they heard colleagues complaining about problems that their solution addressed.

Explorer projects emerge from a passion to seek new frontiers. Many R&D workers have a great affinity for and an interest in their field of expertise and keep tinkering to break through current technological constraints or to apply their work to bigger societal problems. Explorer-type R&D workers enjoy innovation as a hobby. They gain fulfillment from learning new skills, demonstrating their expertise, and interacting with like-minded others. We encountered many who considered innovation to be part of their social identity. They wished to be known for their competencies to move technology forward and develop new applications, striving for a reputation as an excellent engineer or inventor. Being deeply passionate, many of them claimed that they would keep working on their projects even if they weren't paid to. Not surprisingly, they extended their projects into their leisure time: Some had workshops at home or spent their own funds to create prototypes.

Underground explorer projects can be done alone or with enthusiasts in the same field. Collaborators are comrades, some of whom may be quite geographically remote. For example, we observed a team focused on virtual reality applications who were dispersed across the globe, but we also encountered a group of enthusiasts working together locally to develop a luxurious minibus. Underground explorer innovators resemble company employees who are main contributors to open-source software projects, often without the consent of their managers. For this group of contributors, reputation, meeting like-minded others, and enjoyment of the innovation process are well-known motivators.[11]

Explorer projects can be highly relevant to the innovator's company. They may result in new patents, processes, or product components. There are also indirect benefits, given that employees with explorer projects may develop new capabilities that extend current technological limits. These R&D employees, we observed, are most up to date with recent developments in their field of interest. They are often also recognized experts within the company, and the knowledge they obtain from underground innovation increases absorptive

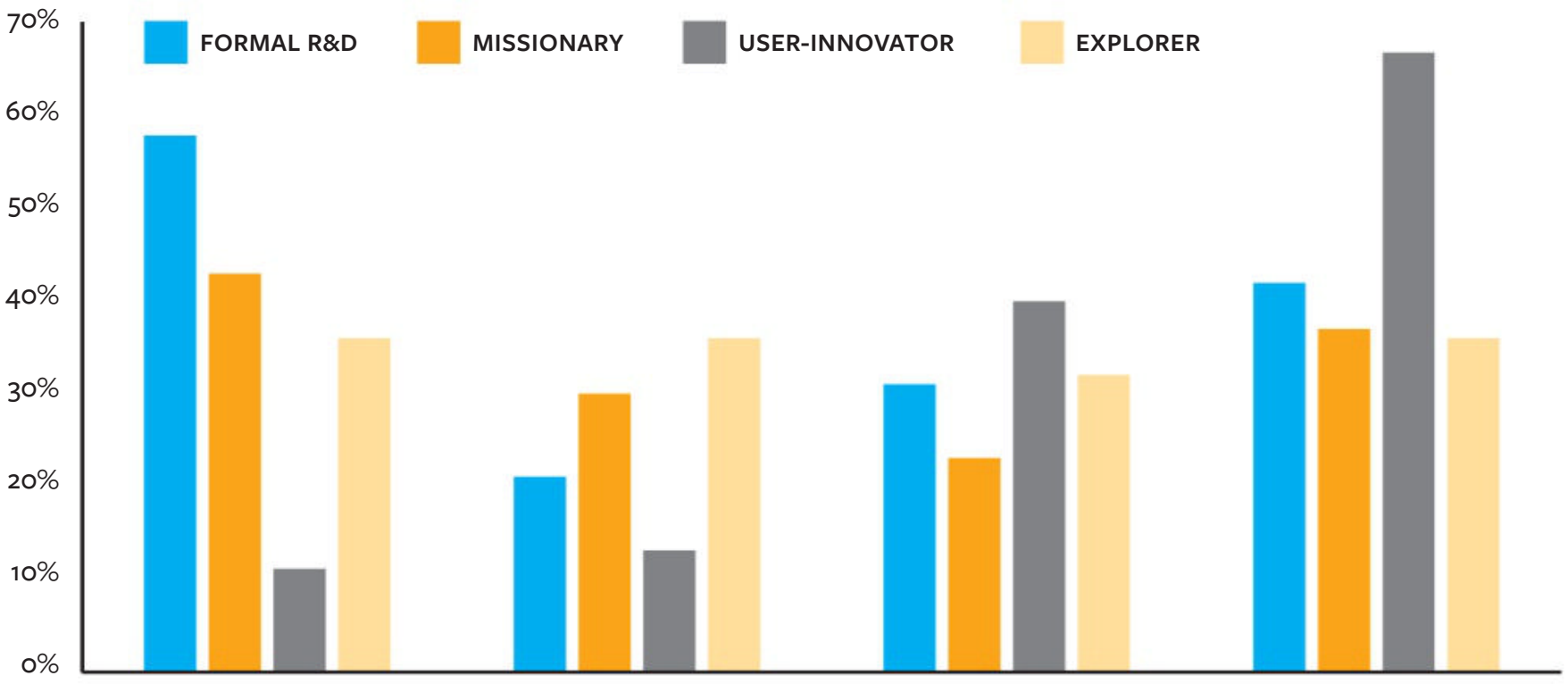
Three Types of Underground Innovator

Under-the-radar developers fall into three general types based on their motivation and how they typically work.

	MISSIONARY	USER	EXPLORER
What motivates them	Product or company practice change	Personal or team-level needs	Passion for innovation
Who they involve	Many; companywide to enable diffusion	Few; local network/ team	Few; buddies and experts with similar interests
Resources they employ	Organizational; seeks new company resources	Slack time only	Personal; invests leisure time
How they disseminate innovations	High effort: proactive persuasion of stakeholders	No or low effort: passive sharing with colleagues	Modest effort: showcasing to express innovative identity
Adoption within organization	Highest; also by management	Local; mainly work team	Least

How Different Types of Innovators Target Their Efforts

Underground projects pursued by missionary and explorer types of innovators are more likely than formal R&D efforts to target general technology development. User-innovator projects focus significantly more on processes and work methods than do formal R&D initiatives.



capacity — the organization's ability to identify, assimilate, and deploy new knowledge.[12] For R&D workers with explorer projects, underground innovation is an important factor in choosing to remain at the company.

When it comes to project dissemination, R&D workers with explorer projects typically make a moderate effort. They take pride in being seen as a good engineer or inventor, so they show their innovations to others inside — and sometimes outside — the company, not to push for implementation as in missionary projects, but to signal that they are capable experts. They do not persist in pushing for acceptance, but rather hope that others will take over.

Because they typically reveal their work to like-minded others but not to managers who might see potential and champion the innovation, their solutions are adopted less frequently than both missionary and user projects. This is because user projects address urgent and specific needs, while explorer projects are often more broadly applicable and spring from a more long-term outlook.

Surfacing Underground Innovations

Underground projects must become visible at some point if organizations are to take full advantage of them. Many companies have an idea management system where employees can suggest ideas that emerge outside of regular R&D and innovation processes.[13] However, these systems typically uncover rough concepts rather than fleshed-out innovations. Suggestion systems also assume that employees will proactively submit ideas. We recommend designing and implementing new, more appropriate mechanisms in order to reveal prototypes and solutions that have been developed out of sight.

Employees with missionary projects respond best to a system that focuses on value creation for the whole company and invites the contributions of heroic intrapreneurs or champions — identities that appeal to this type of innovator. They are motivated to come aboveground by the promise of resources for continued development, support from decision makers, and opportunities for career growth. (For example, Mizoguchi went on to become a senior corporate vice president and

general manager of Toshiba's PC business.) Hence, the suggestion system should provide a pathway to resources (time, money, influence), key decision makers, and facilities to continue as a formal R&D project. After submitting a project, R&D workers usually want to remain actively involved as champion or project manager and receive full credit and recognition in the form of career advancement.

Systems that are tailored to missionary projects will most resemble the innovation infrastructure that many multinational companies already have in place. Internal incubators and innovation challenges assume that the organization has proactive workers who are willing to take charge of implementation once their ideas are approved. A prominent difference is that missionary projects are usually further along in their development. When such projects surface, it is important that decision makers are receptive, not punitive, if innovators have already taken their work further than they would have preferred. For example, an internal challenge seeking ideas for new last-mile logistics solutions accepted a missionary project that had already gone far beyond ideation. The workers involved had developed an electric-powered bike that could be folded and stored in a van, for use by businesses that deliver goods in crowded areas.[14]

Because user projects are more likely to be reported to management when their developers think they have potential value to others, a suggestion system should address pragmatic problem solvers in its communications. Invitations to reveal innovations should ask for personal fixes that are worth sharing — which will help user innovators reflect on the broader applicability of their solutions. User innovators may respond to appeals to altruistically help colleagues, or to save other people from spending time solving the same problem. Offering financial incentives can encourage all types of underground innovators to show their work in the absence of better incentives.

It should be very easy to submit user projects, given that bureaucratic procedures discourage user innovators. Also, because underground projects are generally developed with others, it should be possible to nominate solutions owned by colleagues who may not recognize the broader potential of their innovations. User innovators generally do not want to remain actively involved with diffusion of their ideas. The system should facilitate matchmaking with adopters who will adopt the innovation for personal use or take charge and improve its design so that it can become an official method, tool, or process.

R&D workers with explorer projects will be most responsive to a system that is designed to encourage exploration of new technological frontiers and knowledge sharing for long-term benefit. Because these workers wish to be regarded as highly capable engineers or inventors, it's important that messaging about and from the system addresses this persona.

For explorer innovators, the main incentive is recognition — which can be realized by giving them awards, incorporating their contributions in best practices, including them in networking events and ceremonies, and featuring them in internal media coverage. We observed that some explorer innovators who revealed their work to the internal patent office regarded a positive evaluation as a form of recognition. They also enjoyed being given a consultative role as an expert in the project's ongoing development. In the short run, explorer innovations expand the organization's knowledge base and keep employees motivated, but to be taken forward, others must be involved.

Encourage Underground Innovators to Surface

Organizations should design suggestion systems to appeal to each of the three types of hidden innovators, stating different purposes and offering different resources, incentives, and involvement going forward.

	MISSIONARY PROJECTS	USER PROJECTS	EXPLORER PROJECTS
Stated purpose	Create company value	Find fixes worth sharing	Explore new frontiers
Key incentives to offer	Resources and managerial support	Opportunity for altruism and bonuses	Recognition and networking
Key services to offer	Resources and formal R&D facilities	Easy application and adopter involvement	Technical feedback, market research, and knowledge sharing
Innovator's role after submission	Champion or project manager	Tipster; passive role	Expert; consultative role

Harvesting Underground Innovation

Whatever approach you take to soliciting underground innovations, it's important to dedicate resources to evaluating submissions and developing the best ones. Consider the following in establishing your process:

- Label your initiative an innovation marketplace and invite submissions of only prototypes and developed solutions, to distinguish it from

company systems meant to capture ideas. It must be about innovations that have been developed beyond rough concepts, as the purpose is detecting and spreading innovations.

- Keep the initial submission process lightweight. Allow underground innovators to begin with just a short description; if the project seems appropriate, the reviewer can engage with the innovator for a full description or prototype. Allow colleagues to nominate others' underground projects.
- Choose reviewers from different levels and functions (from the shop floor to senior management) so that someone who is close to the problem being solved can be assigned to review the submission.
- Maintain a personal touch. Do not allow an online platform to get the reputation of being the place where submissions go to die. Review submissions promptly, and personally engage with the submitter as soon as possible; this is especially key for user and explorer projects. Listen carefully to innovators' preferences and expectations.
- Involve experts, potential adopters, and champions in a second-round review. This usually involves decision makers as well, but not exclusively. Reviewers at this stage assess potential value to the company, its R&D portfolio, or some of its workers. They may also give feedback to improve the innovation, or offer help to mobilize resources and do appropriate matchmaking. Especially for user and explorer projects, it is paramount that other people get involved as codevelopers or adopters.
- Determine what additional resources are needed to develop the idea. In many cases, there will be no immediate adoption, only knowledge sharing via internal media or a platform. The submission may also be forwarded to the internal patent office.
- Mobilize a mix of incentives. Beyond resources for continued development and the recognition described above, these may include opportunities to pitch innovations to senior management, financial rewards, or allowances to attend conferences. Active listening during the submission process should reveal what kind of incentives work best for particular underground innovators.

UNDERGROUND PROJECTS BY R&D EMPLOYEES are a valuable source of innovation if this work can be made visible — but are missed opportunities for the organization if they are not. Importantly, we found no evidence that employees engaged in underground projects at the expense of their assigned tasks or that the activity was misaligned with their organizations' strategic priorities.

Missionary projects initiated by heroic intrapreneurs who initially worked under the radar do often come to light, but value created by user or explorer projects is easily overlooked. Capturing it may require new processes and resources as we have detailed here — investments that should pay off not only in tangible benefits associated with particular solutions, but also in a greater ability to absorb new external knowledge, increased employee retention, and a stronger culture of experimentation and personal initiative. ■

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Rethinking Hierarchy

We need to reconceive managerial authority for today's business environment — not eliminate it.

By Nicolai J. Foss and Peter G. Klein

Chris Gash / theispot.com

FOR ALL THE HYPE AND PROMISE SWIRLING AROUND the idea of eliminating management to create agile, flat organizations, bosses and corporate hierarchies have remained extremely resilient. As we argued in the pages of *MIT Sloan Management Review* in 2014, under the right conditions, having such hierarchies in place is the best way to handle the coordination and cooperation problems that beset human interactions.[1] They allow human intelligence and creativity to flourish on a larger scale. They provide a larger structure, with predictability and accountability, for specialists to do their work.

But that doesn't mean traditional, command-and-control organizations are right for today's environment. We see a confluence of business and social trends influencing the development of new kinds of hierarchies. Rapid technological progress, instant communication, value creation based on knowledge rather than physical resources, globalization, and a more educated workforce require us to rethink how we wield managerial authority. Meanwhile, individual views on politics, religion, and culture also inform our attitudes toward hierarchies — such as whether we value autonomy or admire authoritarian figures. All of these factors point to a new, different role for hierarchy to play in meeting the challenges of the 21st century.

The key challenge for designing and operating hierarchies today and tomorrow is to balance two opposing forces. The first is the desire, common to us all, for empowerment and autonomy, which helps companies mobilize employees' creativity and exploit their unique knowledge and capabilities. The other is the need — particularly in environments characterized by rapid change and interdependent activities across the enterprise — to exercise managerial authority on a large scale.

Companies need clear, fairly enforced policies and procedures that achieve coordination and cooperation while respecting employee desires for empowerment and relative autonomy. Managers have to figure out when to intervene and when to let employees handle problems themselves.

These are tough issues without easy solutions. Which decisions should be decentralized (or delegated)? How much discretion should employees have over the decision areas delegated to them? How are these employees incentivized and evaluated? How do executives make sure that all these decentralized decisions mesh together? A central lesson of theories and evidence on organizational structure is that there are no universally "best" answers to these questions, only trade-offs that depend on the contingencies facing the company. Identifying and acting on those trade-offs — not decentralizing everything, everywhere — is the key to successful leadership.

Some proponents of the so-called bossless company pretend that these trade-offs don't exist. They hold that only full decentralization or delegation — "make everyone a boss" — makes companies innovative and adaptable.

When COVID-19 was declared a pandemic in March 2020 and lockdowns began, few leadership gurus proposed making everyone a boss to address the challenges that companies suddenly faced. Rather, managers had to figure out how their companies could survive, which meant changing their business models, enabling remote work for employees, and adjusting to massive demand shocks and supply chain disturbances. Of course, the need for many companies to shift to a remote work model required that many tasks and decisions be delegated. The point is that these changes had to be coordinated, with key decisions made from the top.

To better manage the tension between hierarchical control and individual autonomy, we need to rethink managerial authority.

Rethinking Authority

There is compelling evidence that many companies are removing layers of management and that more decisions are being delegated to employees. Organizations are still hierarchical, but hierarchy is changing its form. There is also evidence that the exercise of authority is changing.

Authority has many faces: It may mean the right to hire, fire, instruct, supervise, intervene, and sanction. But the exercise of managerial authority is also associated with other behaviors: leading, creating structures and processes, forging consensus, aligning behavior around shared goals, and fostering change.

We call these two types of authority Mark I and Mark

II, respectively.[2] They roughly correspond to the distinction between management and leadership. Clearly, the same manager can exercise both types of authority, but it is crucial to understand how they differ and when each is most appropriate, because using one when the situation demands the other can be disastrous.

The traditional view of authority (based on the work of Ronald Coase, Oliver Williamson, and Herbert Simon) assumes that the boss can select the appropriate task, knows all the possible ways to perform it, and can observe the output, so that rewards and punishments can be administered appropriately. In other words, the boss doesn't want to perform the task directly (perhaps because she is too busy with other tasks), but she knows as much about the task as the worker does, and she may or may not observe exactly what the worker is doing as he performs it.

In the modern, knowledge-based economy, however, it is increasingly unlikely that bosses will know everything their workers know. A tech CEO might be skilled at finance and marketing or good at strategic planning and human relations but might not know how to code. A sales manager might understand the product but be unfamiliar with a specific sales territory.

In his later work, Simon described a second notion of authority (perhaps reflecting a changing view of what kind of authority is important in more modern conditions): The role of the boss is to decide what decisions should be delegated.[3] That is, the boss selects a target outcome, decides which workers are best suited to achieve it, chooses how much discretion to give to those workers, and steps aside. Authority in this sense is not about choosing specific tasks and making sure those tasks are performed, but about setting goals, writing job descriptions, selecting people, and evaluating results. This is our Mark II authority — not micromanagement, but macromanagement.

Organizational norms currently demand that leaders shift toward Mark II authority and away from Mark I, because most workers don't want or need a manager telling them what to do and when to do it. Rather, managers have to design the system in which empowered, autonomous workers can flourish.

Certainly, exercising authority via the choice of delegation can add new challenges. Ironically, some workers may prefer less delegation, perhaps because they are risk averse. Another drawback relates to interdependencies. An organizational structure with lots of delegation is more complicated than one based on simple command and control, and managers have to make sure employees are exercising the discretion given to them under Mark II authority in ways that are coordinated with each other and the company's goals. Moreover, company decision-making may be slower under Mark II authority, especially if workers need to discover solutions independently. So while this authority results in a system that is typically more rewarding for workers and more motivating than the traditional form of authority, it might not be the best choice in all situations.

How Not to Use Authority

It is hard to design a hierarchy well, particularly when employees are empowered and the company is delayered. Managers are increasingly facing this challenge.

One of us (Foss) studied the implementation and use of agile software development practices in a large telecommunication firm, which we will refer to as Company E, across multiple sites over five years.[4] Company E adopted the agile methodology as a part of its efforts to be less bureaucratic and more flat; its goals included being able to respond more quickly to market needs, reducing development time and costs, and supporting organizational learning. While the change sped development and cut software maintenance costs, the emphasis on meeting deadlines hampered learning and innovation: Team members reported having less time for reflection, bouncing ideas off each other, and sharing knowledge. And despite the implicit intention to free employees from bureaucracy, the agile method gave project leads the authority to closely track performance, leaving many team developers feeling stifled by an overbearing managerial hierarchy rather than self-managed.

Enabling Authority

One of the most important ways in which managers exercise authority is in how they delegate it to others. To enable authority in subordinates, managers must first convince them that they really do have autonomy over certain decisions and actions and earn their trust that authority will not be summarily withdrawn. And when managers do, on occasion, need to override an employee's decision, they need to proceed carefully to avoid breaking that trust. Putting employees in situations where leadership is shared, or where it rotates among team members, can be a good way to maintain this trust. Another good way to foster trust is to have explicit and transparent rules and procedures, which can reassure employees that their authority is real and will not be compromised by opportunistic, micromanaging supervisors.

Consider *extreme action teams*, which are made up of specialists who perform urgent and interdependent tasks with highly consequential but often unpredictable outcomes. Examples of such teams include U.S. Navy SEALs carrying out special operations or a medical team in a

Problems arise when there are conflicts among roles.

hospital receiving an influx of emergency patients during a natural disaster. These teams use *dynamic delegation*, an organizational structure under which roles and responsibilities are moved around quickly as needed; in this scenario, employees sometimes find that their decisions are overridden and that responsibility is taken away from them.[5]

A recent study found that dynamic delegation helps extreme action teams perform more reliably while also providing training and experience for less experienced members.[6] The broader implication is that this kind of improvisational process works — but only because it happens within an established hierarchical structure. Moreover, overruling may not be perceived as a bad thing when team members think that the person doing the overruling actually knows best. If you are a medical intern treating a patient in critical condition and the senior physician overrules you, thus saving the patient's life, then you are probably quite happy to have been overruled.

Despite such cases, there is little doubt that psychological contracts are often broken by managers engaging in unnecessary and intrusive micromanaging and overruling. Employees may also come to see their position in the workplace and the resources they can use as entitlements. Organizational changes such as restructurings can thus be perceived as breaches of the psychological contract, though the manager would not see it that way. Analyzing data from Spanish manufacturing companies, one of us (Foss) found that such breaches in fact hurt employee productivity.[7] Morale and creativity decline, and employees start to leave.

The ability to establish, maintain, and signal good psychological contracts will be an increasingly important part of the "enabling" exercise of authority. This is one reason why highly decentralized organizations need a lot of structure.

Formalization and Transparency

When job descriptions are well understood and distinct, with little functional overlap, problems coordinating work or making decisions are less likely to arise between employees. But at companies with complex, interdependent processes, where two or more functions might have a stake in a decision point, it becomes critical to proactively clarify roles, decision rights, and the organizational priorities underlying those choices.

For example, at many technology companies, developers' autonomy runs up against the demands of the cybersecurity team, which expects to vet any software before it is put into production. In order to keep coordination problems from becoming more poisonous cooperation problems — which may damage internal relations and be hard to repair — managers must weigh the need to move quickly and innovate against the imperative to maintain a certain level of security, and assign decision rights accordingly.

Many coordination problems are less straightforward than the example just described, and here the classic management instrument of clearly defining roles helps avoid turf wars. Sure, formalized job descriptions can be constraining — and can become perceived entitlements that obstruct organizational change or lead individuals or units to overstate their right to control particular organizational decisions. But these risks can be managed; choosing not to define roles and jobs and formalize processes and procedures is not a good alternative.

If we all know that Paul sings lead and plays the bass, John sings harmony and plays rhythm guitar, George plays lead guitar, and Ringo plays drums, and if all these parts fit together smoothly, the result is great music. Everyone knows his role and how the roles complement one another. Such transparency can work in a small consultancy, a repair shop, or a subunit in a bigger company with just a few employees whose clearly defined roles add up to a coherent whole.

Problems arise when there are conflicts among roles. Who is going to sing lead? Who gets songwriting credit? The larger and more complex the organization, the greater the likelihood of conflict. There are a lot more roles to define and fill. Employees come and go. It's difficult to figure out who is doing what, how well tasks

are being performed, and whether changes need to be made. Full transparency in a large organization may lead to information overload. This is partly why larger organizations are typically divided into departments, divisions, branches, project teams, or other subunits, all of which can be managed like smaller units.

Should the activities of one subunit be transparent to another? On the one hand, it might seem better to have each group focus on its own tasks and not be distracted by what's going on in other units. Let Apple's iPhone division focus on making great phones without worrying about how Apple Music or Apple TV is doing. Let the executive team be concerned about that. On the other hand, some knowledge of the company's overall strategy and performance is necessary for any group to perform well; if Apple is investing more in content creation and integrating media properties with its hardware devices, the teams making these devices might want to design them differently. Finding just the right level of transparency between units is a key management challenge.

Exercising Authority Smartly

Every business model, strategy, organizational structure, or management style has its strong and weak points. Exercising authority smartly means figuring out what decisions to delegate, who to put in key positions, and when to intervene, as well as deciding whether the system needs to be revised in response to changing conditions.

The advantages of delegating a decision or an action may outweigh the costs under some contingencies or conditions but not others. Good managers know this intuitively, but that doesn't make it easy to make the call. Getting delegation right is a perennial management challenge. Moreover, besides the "hard" aspects of organizational design, like formal rules, incentives, and monitoring, there are the "softer" parts from psychology and ethics to be considered: Employees expect rules to be fair, they take pride in being empowered, they want their jobs and roles to feel significant, and they are subject to the biases and judgment errors (such as jealousy, overconfidence, and motivated reasoning) to which everyone is prone — even managers. Taking all this into account is truly difficult.

Delegation is not simply a matter of empowering workers to do their best. Companies like Spotify and Valve, where software projects are mostly independent efforts with little need for coordination between them, can leave team size and composition, project requirements, and even some budgets up to the teams. Bottom-up organization — not literally bossless but flat, flexible, and organic — makes sense for these companies. But it might not make sense for a large manufacturing company that has a portfolio of highly interdependent products featuring shared designs and components and that sells bundles of complementary products. For such a company, more centralized control is needed. In deciding what, when, and how to delegate, managers can begin by asking a few simple questions to determine what will work best in their organization.

Is it more important to make the best decision or a faster, good enough decision? If there's a high degree of urgency around decision-making, it's often best for higher-level managers to make the decisions without dialogue and consensus.[8] Of course, quick decisions may turn out to be wrong, but if the costs of delay are high enough, they are often worth the risk. Does this need for quicker decisions justify the potential for a demotivating effect on employees? That depends on the reason speed is needed, the capability of top managers, and the attitudes and expectations of employees.

Speedy decisions are often made in response to threats — typically a sudden and unexpected drop in company performance. In the face of an existential threat, a company's decisions become highly consequential. Under these conditions, a decentralized approach is likely to perform less well, because subordinates are less willing to assume responsibility in the face of such risk and may make slow or poor decisions. In such cases, senior managers are likely to concentrate and retain control over key decisions.

What knowledge is needed, and which employees have it? Is the most critical knowledge for a given

Delegation isn't just empowering workers to do their best.

decision held by senior managers (who know the company's overall strategy), by middle managers (who have a bird's-eye view of their department or division), or by lower-level employees (who know their customers best)? Can knowledge at lower levels of the company be neatly summarized (say, in a customer relationship management database) and made available to higher-level managers? What about the reverse? Can strategic priorities be communicated to lower-level employees to explicitly inform certain decisions or actions? It is crucial that managers ask themselves these questions.

At a critical point in Intel's history, when it transitioned from mainly producing memory chips to mainly producing microprocessors, its middle managers had a better grasp of the right strategic direction than top managers did. Still, Intel's senior managers were often better positioned to grasp the key issues at the company, industry, and economy levels, as CEO Andy Grove demonstrated.

The fundamental task of a company's top decision makers is to synthesize all information that could have a significant effect on the company's current and future performance and make the big decisions on that basis. They can rely on advisers, experts, consultants, and what we earlier described as extreme action teams. But ultimately, the buck stops with the CEO. So while some decisions should be delegated to employees with superior knowledge of local conditions, overall authority — including decisions about which decisions to delegate — cannot be passed down the line.

What do employees feel they currently own or control? Many employees naturally feel a sense of ownership over what is currently in their control, such as their budgets and decision rights, and making changes to those decision rights poses particular challenges.

One of us taught a course for many years with complete control over topics, readings, and classroom activities, then moved to another university where the curriculum for that course was controlled by the department to ensure uniformity across instructors. Losing that autonomy led to a lot of frustration and resentment.

The behavioral economics concept of *loss aversion* comes into play here: People tend to value things they had and lost more highly than things they never had. Any choices that centralize decisions that were previously decentralized are going to cause some pain. Managers must convincingly explain the rationale for change to affected employees.

Is it fair? Organizations must consistently apply fair and transparent principles when resolving disputes — that is, they must demonstrate procedural justice. If employees believe that the processes are fair, they are more likely to accept managerial intervention, whether that be occasionally overriding an employee's decision or centralized authority itself. Can managers explain when and why autonomy must be curtailed? Do employees feel that their concerns about autonomy and responsibility are heard and taken seriously? If so, then choosing not to delegate certain decisions, or to intervene when necessary, is likely to work. If not, employees could become disgruntled.

THE NEED FOR HIERARCHY ISN'T GOING away, but the form it takes is changing: deciding how things will be done rather than telling people what to do, and designing and enforcing the rules of the game rather than making everyone play it in a certain way. As Haier Group founder and CEO Zhang Ruimin put it, "Leaders of other enterprises often define themselves as captains of the ship, but I think I'm more the ship's architect or designer. That's different from a captain's role, in which the route is often fixed and the destination defined."[9]

In redesigning managerial authority and hierarchy for the 21st century, leaders must realize that they don't need to know everything, but only just enough, and they need to consider what their employees want and think is fair in designing structures and systems. ■

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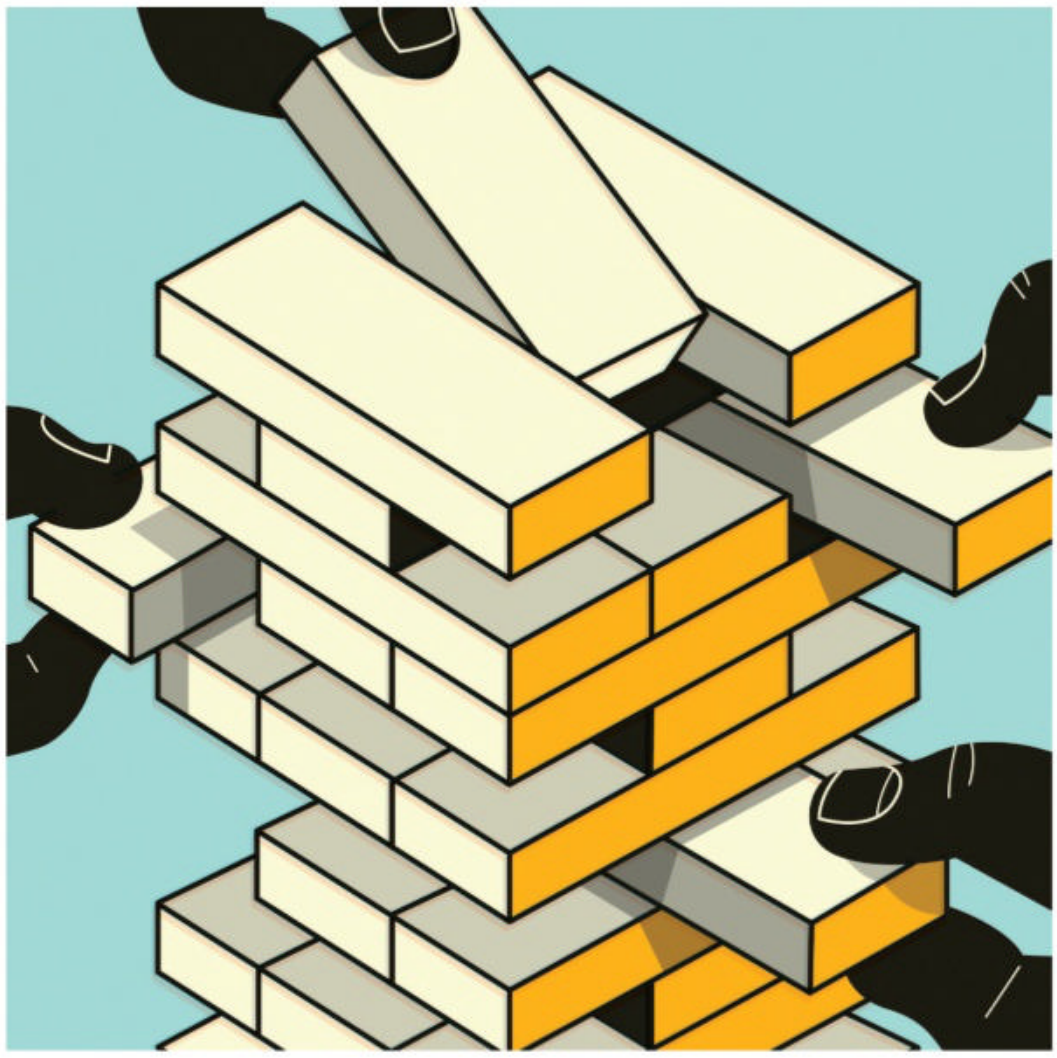
Strategizing Across Organizations

Capitalizing on big opportunities and solving systemic problems will require organizations to come together to develop strategies as a group.

By Rafael Ramírez, Trudi Lang, Matthew Finch, Gail Carson, and Dale Fisher



BUSINESSES, NONPROFITS, POLICY makers, and others frequently find it helpful to come together in networks of organizations to tackle large-scale challenges, such as COVID-19, extreme weather events, humanitarian disasters, or supply chain disruptions. But devising strategy in such meta-organizations is far different from strategizing within a single organization — and much more difficult. A new approach to collaborative strategy can help leaders in individual organizations work with others to achieve both shared and individual strategic priorities.

Meta-organizations (a term coined by Göran Ahrne and Nils Brunsson) can range from tightly organized and well-established trade groups like the International Air Transport Association to loosely structured, short-lived groups like the U.K.'s Brexit Business Taskforce.

One example of a meta-organization is the Global Outbreak Alert and Response Network (GOARN), which comprises more than 250 partner organizations. It works to ensure that resources rapidly reach those who request support during international public health crises. GOARN's operations are based at the World Health Organization's headquarters in Geneva, where it is governed by a 21-member steering committee. In late 2021, the committee was facing uncertainty about the outcome of the pandemic and the future that GOARN would face. GOARN's partners — which include United Nations bodies, international humanitarian organizations, government public health agencies, and technical networks — were calling for it to expand its mission. These diverse organizations have expertise in logistics, emergency medical care, incident response training, operational research, epidemiological investigation, and other domains, which they bring to bear on many different public-health emergencies every year. GOARN's leadership realized that the network needed to evolve, which would require the development of a new long-term strategy that would meet the needs of both the collective as a whole and each partner.

Leaders working to set strategy in meta-organizational collectives like GOARN will encounter several challenges. Even well-established meta-organizations often lack a well-defined hierarchy, which means that decisions can't simply be handed down from the top; negotiation, voting, and nonbinding rules are needed

Harry Campbell / theispot.com

to coordinate action. Leaders have to manage tensions between the collective and its members, who can jealously guard their identities and autonomy. There is also a risk of inertia and complacency if member organizations feel they have little or no stake in the direction of the group as a whole.

We have developed a methodology to help guide meta-organizations through the process of devising strategies collectively. It is designed to facilitate a complex discussion so that groups can consider potential changes in the environment in which they operate, examine how they might need to be configured to respond to those changes, and ways to safely experiment and explore new opportunities.

Our approach has three components. The first is scenario planning, where participants explore alternative futures and test assumptions about the environment that the meta-organization and its member organizations might find themselves in when the plan is up and running.

The second is assessing each scenario for value-creating systems to derive value from interactions among all the participants in the network.[1] Based on this assessment, participants configure new systems that are intended to create value for the group and its members. They also consider commonalities among the value-creating systems in all scenarios and the ways in which each of them might be put into practice.

Finally, there is ongoing socializing, which brings participants together to discuss the strategy and its possible outcomes and, subsequently, to adapt the adopted strategy so that it becomes a living process and not merely a one-off, formal, and static document.[2]

An essential feature of the methodology is a strategy lab that allows participants to take time out from day-to-day business to create new strategic directions in pursuit of their shared goals. A strategy lab can be convened online, in person, or as a mix of the two and can be customized to meet the unique needs and goals of participants. The GOARN strategy lab, created in the midst of the COVID-19 pandemic, was all virtual and included two workshops, in October and November 2021, followed by a final, large-scale session in December.

We applied this methodology to support GOARN in developing a new four-year strategy. Faced with calls from partners that the network do more — provide more training, conduct more research, and focus more on preparedness for the next crisis — leaders set out to revisit the network's strategic priorities. This led to a collaboration with the University of Oxford's Saïd Business School to run what became known as the GOARN Collaborative Strategy Lab.

Members of the GOARN steering committee and representatives of its partner organizations met via teleconference for the series of workshops. Following the three-phased methodology outlined above, a group of facilitators from Oxford led two sessions largely with steering committee members to explore scenarios and develop value-creating systems for each scenario. In the third and final session, leaders of many GOARN partners met virtually to explore the strategic implications of the work of the previous two sessions.

Key Considerations for Strategizing in Meta-Organizations

Based on our experience in the strategy lab, we identified several important points that organizational leaders should keep in mind when setting a collective strategy.

Establish shared meaning. Even the concept of strategy may mean something different to each of the participants involved in strategy-making. For instance, early in the GOARN strategy lab sessions, some participants equated it with adding new activities, while others thought it meant determining how to improve what was already being done. Therefore, it is advisable to set aside time to get a shared sense of what key terms mean, especially those that are not self-evident. Multiple definitions are acceptable as long as the differences are understood and accepted.

Understand how the parts fit within the whole. Sometimes individual member organizations, especially small or locally focused ones, don't know how the whole meta-organization operates, because they have been exposed to only small parts of it. They in turn don't see how their own actions benefit the organization as a whole and might fail to fully appreciate how it benefits them. When devising a collective strategy, it is useful to keep in mind the idea of the holographic organization — in which the whole and its parts interact for mutual benefit.[3] For GOARN, this implies that its full global potential can be manifested, at a smaller or larger scale, in each intervention that its partners undertake — to deal with an outbreak of Ebola, cholera, or mpox, for example — wherever it might occur. In meta-organizations, this means making sure that each partner can mobilize the resources of the whole network while ensuring that each part can be tapped to contribute to the effectiveness of the whole.

Pay attention to relationships and power differences. In meta-organizations, the power to direct action is not as strong as it is in hierarchical organizations, because members have more resources and are far better equipped to take action on their own than individuals in a hierarchy. In this setting, it's critical to strengthen the network's social capital by developing a shared language;

enhancing trust, respect, and empathy; and forging new links.

Politics and culture are also far more important considerations in meta-organizations than within individual members. Research has shown that the interests of the most powerful members can dominate while the less powerful struggle to have an effective role.

In the GOARN lab, this issue was addressed by inviting all members to participate in the process of defining the strategy rather than merely react to a draft strategic plan crafted by leaders. Participants were able to step back from their specific areas of expertise and discuss big-picture problems with others who might be working on different challenges. They found the opportunity to engage in this consultative process outside of the context of urgent emergency responses deeply rewarding.

It is also important to recognize how political and cultural considerations and language might affect the ability of some participants to fully engage. Attending to such differences is an important aspect of strategizing in such settings because they can have an impact on the quality of discussions.

Reinforce a shared sense of purpose. A single organization can be a member of multiple networks at the same time, making boundaries and allegiances more complicated. This requires a meta-organization to find ways to ensure that members' interests are compatible even if they cannot be fully aligned.

The leaders of a meta-organization must define an identity that reinforces a sense of shared purpose and create goals that harmonize the network and its members. Achieving this harmony isn't easy and will vary from one collective to another. It is advisable to anticipate in advance how much divergence from these shared goals is tolerable and to identify governance mechanisms for addressing deviations early and constructively.

Benefits of the Strategy Lab Approach

GOARN's strategic outlook for the next four years was finalized in June 2022. Before then, the strategy lab had already yielded positive outcomes for the network, as well as insights into effective strategizing practices for meta-organizations in general.

For GOARN, which was accustomed to constantly moving from one crisis to the next, the strategy lab created the opportunity to look beyond day-to-day operational questions. Members could bring to light existing assumptions and ensure that "today's events do not define tomorrow's outcomes," in the words of one participant. It also enabled the network to mobilize the considerable diversity of its partners to develop a robust, well-accepted strategy.

The lab's use of multiple scenarios made it easier to acknowledge and incorporate divergent perspectives. GOARN leaders could consider possibilities that had not previously occurred to them, and they could also discuss future challenges and opportunities GOARN might face and novel options for action. For instance, partners could discuss a scenario where collaboration between countries has broken down, what that might mean for the meta-organization at an operational level, and where value could be offered. Finally, participants believed that the strategy lab methodology increased their sense of ownership of both the strategy and GOARN as a whole.

Our experience with the GOARN strategy lab also provided the following insights about how other meta-organizations could create beneficial conditions for working on a collective strategy.

Using multiple scenarios made it easier to incorporate divergent perspectives.

1. Ensure that each member of the collective can tap the broader assets of the network to carry out its own activities, that its own contributions are valued by other members and the collective as a whole, and that strategies can be implemented in a way that is best suited to each partner/member and reflects their priorities.

2. Foster a culture that accepts differences and sees advantage in diversity. The use of scenarios can help articulate different views and show them as plausible, acceptable, legitimate, and relevant. This enhances understanding of the differences and can even help such disagreements to become productive assets rather than liabilities to be papered over.

3. Establish a mechanism, such as the strategy lab, to periodically revisit the group's common ground, update how it is understood, and decide what to keep in and remove from the collective strategy. Strategizing is an iterative process linked to a program of monitoring, evaluation, and learning.

4. Recognize that developing strategy is more about defining and prioritizing goals and the activities needed to accomplish them than it is about adding ever more targets and activities.

5. Facilitate conversations that are challenging, courageous, respectful, inclusive, productive, relevant, encouraging, and action-oriented.

ORGANIZATIONS OPERATING IN turbulent times can benefit from banding together to enhance their resilience and to find or create new opportunities. A lab-based approach to setting strategy offers a safe and creative space to explore alternatives, understand different opinions, reinterpret identities, and codesign the collective relationships required to work together effectively.

Ultimately, however, a strategy is useful only if it is implemented through the leadership of the meta-organization and its member/partner institutions. It requires a commitment to follow through with monitoring and evaluation, and the strong governance of well-resourced meta-organization leadership and operational support teams. Only then will a meta-organizational strategy lead to coordinated activities by member organizations that further the goals of the collective. ■

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Why Innovation Depends on Intellectual Honesty

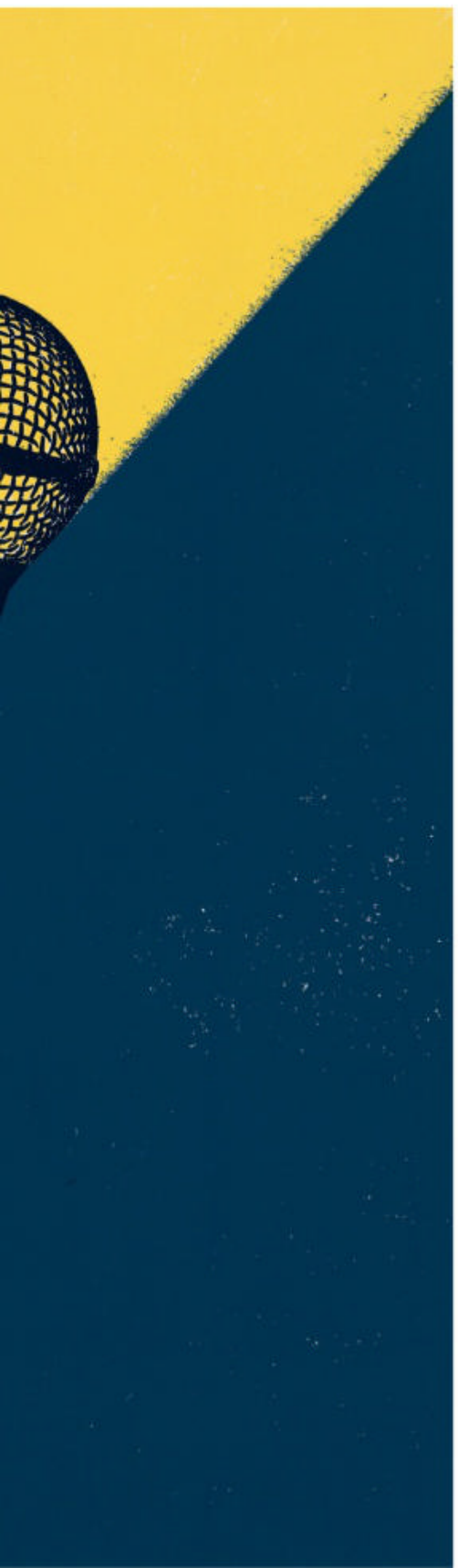
Fostering psychological safety isn't enough if managers don't pay particular attention to creating conditions for healthy debate.

By Jeff Dyer, Nathan Furr, Curtis Lefrandt, and Taeya Howell

INNOVATION FLOURISHES WHEN PEOPLE on a team openly debate and disagree. The question is how to get them to speak their minds, particularly when it means challenging their leaders or acknowledged experts. Some management experts argue that the best way to get people to speak up is to create *psychological safety* — an atmosphere described by Harvard professor Amy Edmondson as one in which "people feel accepted and comfortable sharing concerns and mistakes without fear of embarrassment or retribution."[1]

But research also indicates that feeling that it's safe to dissent isn't the only important factor for ensuring healthy debate. In our studies of innovators and their teams, we've found there can be a tension that few people recognize between psychological safety and intellectual honesty: that is, a culture in which team members will proactively voice their ideas and disagreements in a rational and constructive way (like the *Star Trek* character Mr. Spock, but with acknowledgment of their human emotions and biases).[2] Intellectual honesty significantly increases a team's ability to innovate — particularly to create breakthrough innovations — because it unleashes the knowledge of team members.

We found that many teams prioritize psychological safety without realizing that the social cohesion it promotes, though beneficial to learning, can sometimes undermine intellectual honesty rather than encourage it. However, when people are brutally honest (Steve Jobs would tell people at Apple that they were "full of s---"), they can undermine others' feelings of



acceptance and respect — which are the cornerstones of feeling secure to challenge one's colleagues.

If leaders can balance psychological safety and intellectual honesty, they gain the benefits of both. Consider the debate over whether to greenlight the Amazon Kindle in the mid-2000s. Jeff Wilke, then the CEO of Amazon's retail business, opposed the idea to the point that he challenged Jeff Bezos in a board meeting: Wilke predicted that the company would miss its targets and frustrate customers because it was a software company that lacked experience creating hardware. As Wilke recounts, his comments led to a more thorough discussion of the pros and cons of the decision, during which Bezos conceded Wilke's points but still argued that Amazon would be better served by developing a new set of skills. "Turns out I was right on everything that I called out, and Jeff was still right to say we should do it," said Wilke. "[We] created a valuable skill set that we can use to invent new things on behalf of customers."[3]

Wilke reflected that the courage to speak his mind came from one of Amazon's core management principles: that leaders are obliged to "have a backbone" and "disagree, even when it is uncomfortable or exhausting," and to then unite behind whatever decision the team has made, without negative repercussions.

We have found that teams like Amazon's executive team, which nurtures both psychological safety and intellectual honesty, innovate more successfully than teams in which one culture dominates. We have identified the factors that are most important to establishing this balance, and below we outline what leaders can do to create a high-performance learning and innovation culture.

Find the Right Balance

We identified four basic team cultures, each of which reflects a different emphasis on psychological safety and intellectual honesty and all of which support or discourage learning and innovation to different degrees. (See "Four Innovation Cultures," p. 69.)

A company may have a dominant culture; however, teams within a company may have different cultures depending on who runs them and how. Assessing the culture of a team can help leaders identify its strengths and vulnerabilities and determine any steps needed to improve team performance.

Distressed Team Culture

Teams that score low on both psychological safety and intellectual honesty are poor at learning and innovating. People are unwilling to be honest because they fear — often with good reason — that they will be attacked if they dissent.

We often find distressed teams in two types of organizations: (1) those where individuals lack emotional intelligence (that is, they are unable to manage their emotions, lack empathy, and behave unpredictably); and (2) where the company itself is under threat and no one, including leaders, is willing to acknowledge it. In such cultures, leaders often demand unrealistically high performance, but employees don't feel comfortable confronting leaders or each other with their honest concerns.

Low emotional intelligence is a particular problem when leaders are highly insecure or overconfident and can't admit that they are wrong. A top-level executive with a biotechnology startup described to us a culture in which the CEO publicly disagrees with team members and attacks them personally to discredit them. "Naturally this completely shuts down any desire to express honest disagreement with him," the executive observed.

A culture of fear and intimidation cost Nokia its edge in the mobile phone market, according to executives and managers who worked there in the late 2000s. Senior leaders pressured managers to perform without revealing the extent of threats from competitors, and they punished anyone who dissented. Employees were afraid to deliver bad news, including that the company's cellphone strategy was failing. As a result, the company could not keep up as

THE RESEARCH

- **The authors surveyed teams in more than 60 technology startups and established companies in a variety of industries to understand the interaction between psychological safety and intellectual honesty, and the extent to which they are essential to fostering innovation.**
- **To measure psychological safety, they used the survey questions developed by Amy Edmondson for her study published in *Administrative Science Quarterly*.[i]**
- **To measure intellectual honesty, they developed questions based on their interviews with dozens of teams, as well as the existing management research on employee voice in organizational change.**

Jon Krause / theispot.com

smartphones displaced the older technology that had enabled Nokia to prosper.[4]

Anxious Team Culture

Anxious teams score high on intellectual honesty and moderate to low on psychological safety. Team members are encouraged to be brutally honest because it's better to be right, and win, than it is to be nice.

To return to Steve Jobs: He famously described his approach as being designed to keep "the B players, the bozos, from larding the organization. Only the A players survive."[5] Just as famously, he cared little for creating social cohesion. Apple's former chief design officer, Jony Ive, has described a conversation during which Jobs berated him for wanting to be liked by his team at the expense of being completely honest about the quality of their work.

This example illustrates two types of conflict that emerge from intellectual honesty: *task conflict* and *relationship conflict*. Task conflict — disagreement about the work — can be highly productive for innovation and team performance. But relationship conflict, which arises when the way someone says or does something makes people feel rejected, is detrimental.[6]

Here's why. On teams that have an anxious culture, people are willing to push one another to learn through disagreement. However, intellectual candor without psychological safety can exact an emotional toll. In interviews, people on teams with an anxious culture told us that they often don't feel safe or respected. They worry that they are in constant competition with their colleagues and that their value fluctuates with what the group thinks of their current idea.

Because such environments are stressful, anxious cultures have higher turnover rates than psychologically safe cultures do. Ray Dalio, founder of the hedge fund Bridgewater Associates, pushed for radical truth and transparency — and once reported that 25% of new employees left within 18 months.[7] According to one analysis, Tesla, also noted for its blunt culture, loses 27% of its executive team every year, including 44% of leaders who report directly

Five Rules to Fast-Track Intellectual Honesty

LEADERS CAN APPLY THESE five rules to quickly establish or reinforce a team culture that balances candid discussion with respect for individuals. The rules set a baseline for intellectual honesty with some elements of psychological safety in cultures where either is lacking. They can also help leaders to quickly integrate new teams or individuals into an existing culture where psychological safety hasn't yet developed and open discussion is prized.

Focus on a common goal. People are more likely to speak candidly when they are committed to working toward a common goal and they know they need one another to achieve it.

Expect disagreement, but require respect. Debate about the work should be actively encouraged, because it helps the team learn and results in better solutions. Leaders can demonstrate how to disagree respectfully — that is, without animosity or negative emotions that damage relationships.

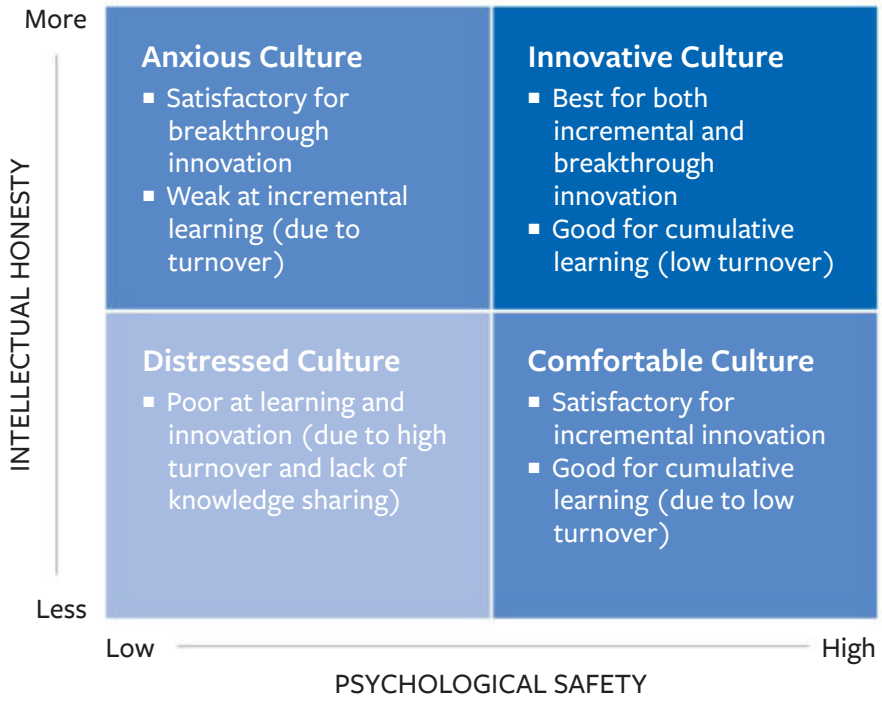
Stick to facts and evidence. Leaders can counter the human tendency for people to insert their emotions and egos into a discussion by insisting on a process (such as the scientific method) for developing answers to questions as a group using verifiable information and logical arguments.

Acknowledge biases, priorities, and knowledge gaps. People may disagree because they have different biases, priorities, or information. When leaders begin an inquiry by being open about the ways in which they might be wrong or uninformed, they set the stage for other team members to challenge their own beliefs and to share what they don't know. Discussion can then focus on filling the gaps and exploring multiple viewpoints.

Ensure that everyone has a voice. People are more likely to contribute when they believe their ideas and opinions are taken seriously. When leaders wait to share their opinions until everyone else has weighed in, they signal that team members can speak freely. In addition, when leaders listen actively and solicit alternative views, they help all team members feel that their input has value.

Four Innovation Cultures

THE EXTENT TO WHICH A TEAM balances psychological safety and intellectual honesty can be mapped to four innovation cultures, along with a neutral culture that is subject to neither the dangers nor the benefits of the others. Each culture will influence how well a team can innovate and the kinds of innovations they will be best at.



to CEO Elon Musk.[8] Teams with high turnover may gain fresh thinking, but they are less able to retain the lessons learned from the past.

Comfortable Team Culture

A comfortable culture is the opposite of an anxious culture. Comfortable teams score high on psychological safety and moderate to low on intellectual honesty.

Team members in this type of culture often score high on traits like being agreeable and needing to be liked, and low on assertiveness and being proactive. They also tend to have high emotional intelligence and place a high value on attending to social relationships.

Members of comfortable teams feel accepted and respected and even feel safe to speak up — but they choose not to. They may rationalize that being positive and avoiding potential negative conflict is better for morale and the productivity of the team over the long run; they may not care enough about the mission of the team or organization to rock the boat; or they may not believe that leaders will respond to their ideas and concerns, so they don't bother sharing them.

When Ive decided not to push his team at Apple, it's unlikely he was afraid of being embarrassed or punished. Rather, he prioritized being positive instead of giving feedback that would have improved the work. Ive nevertheless understood that task conflict can be positive. It's when teams don't distinguish between task conflict and relationship conflict that they fail to raise issues and problems that can diminish team performance over time.

Teams with a comfortable culture neither expect nor demand a high degree of candor, nor do they aggressively challenge the status quo. On the positive side, such teams tend to perform consistently and to be good at incremental innovation. Team members work collaboratively and respect one another, which keeps turnover low and allows the team to avoid mistakes that can occur when individuals with important knowledge leave.

On the other hand, they often will not push one another to improve, and as a result, they rarely produce pioneering innovations. When people have no fear of being critiqued, they can become complacent; they may, for instance, offer lazy or poorly conceived ideas because they know it won't hurt their standing. As one manager at a professional services firm admitted, he felt safe to disagree, but he was not assertive when challenging colleagues' ideas unless his work was directly affected. "Active disagreement just isn't part of our culture," he said.

Meanwhile, according to one study, people in psychologically safe environments tend to be less motivated and don't work as hard as people who expect their performance to be critiqued.[9] Even Edmondson, who uncovered the connection between psychological safety and innovation, has acknowledged that in some environments where psychological safety is high, "people are so comfortable with each other that they may spend an inappropriate amount of time in casual conversation at the expense of work."[10]

Innovative Team Culture

The most innovative teams over the long term are those that balance psychological safety with intellectual honesty. Members of innovative teams may think of themselves like the inspiring teacher who pushed them to be their best. They feel safe to speak up when they see things differently, and they willingly push one another to be the best as they pursue common goals. Like those in anxious cultures, they openly debate ideas and take decisive action, but they do so in ways that help team members maintain respect for one another. In contrast to people in distressed cultures, they are able to set aside their egos and change their minds when presented with evidence that favors another viewpoint.

As the CTO for ASML, Martin van den Brink led a decade-long, multibillion-dollar effort to create extreme ultraviolet lithography machines, a technology used to make microchips that will power the next generation of electronic devices. In the high-performance culture that led to this breakthrough, being wrong was part of the innovation process.

"People who can't handle the truth can't admit a mistake, and so they go blindfolded off the cliff," said Brink. "[This is] much more dangerous and less interesting compared to looking at the cliffs and finding different ways you can approach them, and taking those approaches as a challenge. … So I never pretend I will be right. I just say, 'This is what I think; tell me the flaw in my thinking.'"[11]

Teams may also have a *neutral team culture*. They experience a moderate amount of both psychological safety and intellectual honesty. Consequently, they are not subject to the dangers of the distressed,

Team Innovation Culture Assessment

LEADERS CAN USE THIS SURVEY TO assess the level of psychological safety (PS) and intellectual honesty (IH) on their team, identify their team's culture, and understand its ability to learn and innovate. The survey includes 10 questions (five for PS and five for IH). Tally the scores for the first five questions to get a PS score, and tally the last five questions to get an IH score. Scores above 30 indicate high PS or IH. Scores from 21 to 30 indicate a moderate level, and scores below 21 indicate a low level.

How to Interpret the Scores

PS and IH are <21 = Distressed Culture
PS is <21, IH is >30 = Anxious Culture
PS is >30, IH is <21 = Comfortable Culture
PS and IH are >30 = Innovative Culture
All other combinations = Neutral Culture

Please answer the following questions on a scale of 1-7.
1 = Strongly Disagree, 4 = Neither Agree nor Disagree, and 7 = Strongly Agree.

PSYCHOLOGICAL SAFETY

- **Working with members of this team, my unique skills and talents are valued and utilized.**
- **No one on this team would deliberately act in a way that undermines our efforts.**
- **If you make a mistake on this team, it is not held against you.**
- **Members of this team are able to raise problems and tough issues.**
- **People on this team never reject others for being different.**
- **TOTAL**

INTELLECTUAL HONESTY

- **Our team expects extreme candor, even if it might create some social friction.**
- **We challenge each other on our team when we disagree, even when doing so is uncomfortable or exhausting.**
- **Team members don't hesitate to express concerns about practices or behaviors that are detrimental to the team.**
- **Our team makes decisions based on objective data and facts rather than on individual opinions, position, or egos.**
- **We have a culture of candid debate, and people are expected to provide and receive frank criticism as they defend their ideas and proposals.**
- **TOTAL**

comfortable, and anxious cultures; nor do they have access to the potential benefits of the innovative, anxious, or comfortable cultures. Members of neutral teams are not very good at learning or innovation, and they do not have strong social cohesion. Thus, the neutral team culture has little influence — good or bad — on team members' satisfaction with their work lives or their innovation performance. (See "Team Innovation Culture Assessment," p. 70.)

Principles for Effective Intellectual Honesty

On an innovative team, members feel respected and supported. They learn quickly and easily as they question and challenge one another, acknowledge what they don't know, and admit mistakes. Intellectual inquiry replaces advocacy as the team members pursue truth in an unbiased, rational way rather than jockeying for position. Getting there requires simultaneously creating safety while encouraging — even demanding — that team members follow ground rules when they interact. (See "Five Rules to Fast-Track Intellectual Honesty," p. 68.)

We have identified the four principles that are most important to achieving an innovative, high-performance team culture. The first two relate to the personal characteristics of leaders and team members. The other two address how leaders can encourage intellectual honesty and balance it with psychological safety.

PRINCIPLE 1: Foster emotional intelligence. Emotional intelligence is the mortar that binds psychological safety with intellectual honesty. Leaders need emotional intelligence to create an environment where team members feel comfortable speaking their minds and are valued for doing so. Emotional intelligence includes four main elements: self-awareness (awareness of your emotions), self-management (regulation of your emotions), social awareness (empathy and the ability to see others' viewpoints), and relationship management (the ability to find common ground and build rapport).

While leaders need to be skilled at all four, *social awareness* and *relationship management* are particularly important to encouraging debate without destroying psychological safety. Leaders who can listen with empathy, see others' perspectives, and defuse conflict by finding common goals are more likely to foster intellectual honesty while preserving safety. They can engage in self-reflection, show humility about how much (or how little) they know, use humor to relieve tense situations, and tell people they are valued.

Developing emotional intelligence among team leaders was so important to Dominic Orr, the former CEO of Aruba Networks, that he often hired psychologists to help his executive team members understand their strengths and weaknesses and develop the confidence to be candid with one another. His goal was to make leaders comfortable with themselves, comfortable with their peers, and confident enough in their own opinions that they were willing to be honest. That's the only way, according to Orr, that a team can reach the best decision.[12]

PRINCIPLE 2: Hire and develop proactive employees. Just as teams are unlikely to build psychological safety unless their members have emotional intelligence, they are unlikely to build intellectual honesty unless members are proactive: that is, they show initiative, take action, and persevere to bring about meaningful change. Research shows that personal initiative is the most important individual trait in predicting whether someone will offer their ideas or raise questions. It's more than twice as important as psychological safety.[13]

When Charles Gorintin founded the French company Alan in 2016 with the aim of creating innovative digital offerings for health insurance and health care, he filled the company's executive ranks with people who were proactive and willing to challenge one another's ideas. They created a culture in which leaders are encouraged to make decisions swiftly with the best information available — even with only 70% of what they need — and to change course quickly when new information emerges.[14] As Gorintin explained, "It is often better to make the wrong decision, act, and learn how to fix it than wait to make a decision in the first place."

PRINCIPLE 3: Legitimize and encourage honesty. One of the key barriers to honesty is that it is personally risky. Indeed, some research shows that when employees raise problems or concerns about the organization's practices or processes, they get worse performance evaluations.[15] Team members might need to be convinced that they won't be punished for being frank.

Organizations can address this challenge through management principles or processes that legitimize and encourage honesty. Wilke, the Amazon executive who challenged the initial idea to build the Kindle, had the benefit of working in an environment that encouraged task conflict. Research also suggests that task conflict within teams leads to

more entrepreneurial strategies, more innovation, and higher performance.[16]

PRINCIPLE 4: Subordinate egos to unifying goals. People are more willing to speak up when they are pursuing goals they care about. When it comes to ensuring intellectual honesty, employees' feelings of engagement with and responsibility for the team's or organization's mission are also more important than psychological safety.[17] "I find that candor emerges when people are committed to the mission and feel dependent on their teammates for getting the mission accomplished," said Sterling Anderson, a former Tesla executive and founder of Aurora Innovation, a $3 billion startup that sells self-driving vehicle technology. He tells team members to "put your ego in this box by the door" and reminds them that if they disagree with an idea, they need to both offer proof of why it's wrong and convey to their colleagues that they still trust them.[18] The ability to package disagreement with respect is key to preserving psychological safety while ensuring intellectual honesty.[19]

LEADERS TEND TO BE OVERLY OPTIMISTIC

that if they've created a psychologically safe culture, then intellectual honesty — and hence learning and innovation — will thrive. Yet psychological safety and intellectual honesty can sometimes work against each other. The challenge for most leaders is to promote candid debate that is focused on the problems the team needs to solve and to defuse interpersonal conflict.

Balancing psychological safety with intellectual honesty leads to higher performance. Leaders can start by setting aside their egos and inviting scrutiny of their own ideas. When everyone becomes intellectually honest with themselves, the practice will reinforce itself.

Team members will feel safe to speak freely when revealing biases or being wrong is treated as part of the process for finding the best answers. That kind of intellectual honesty — candid, but not brutal — may be the missing ingredient that a team needs for innovation to prosper. ■

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Become a Better Problem Solver by Telling Better Stories

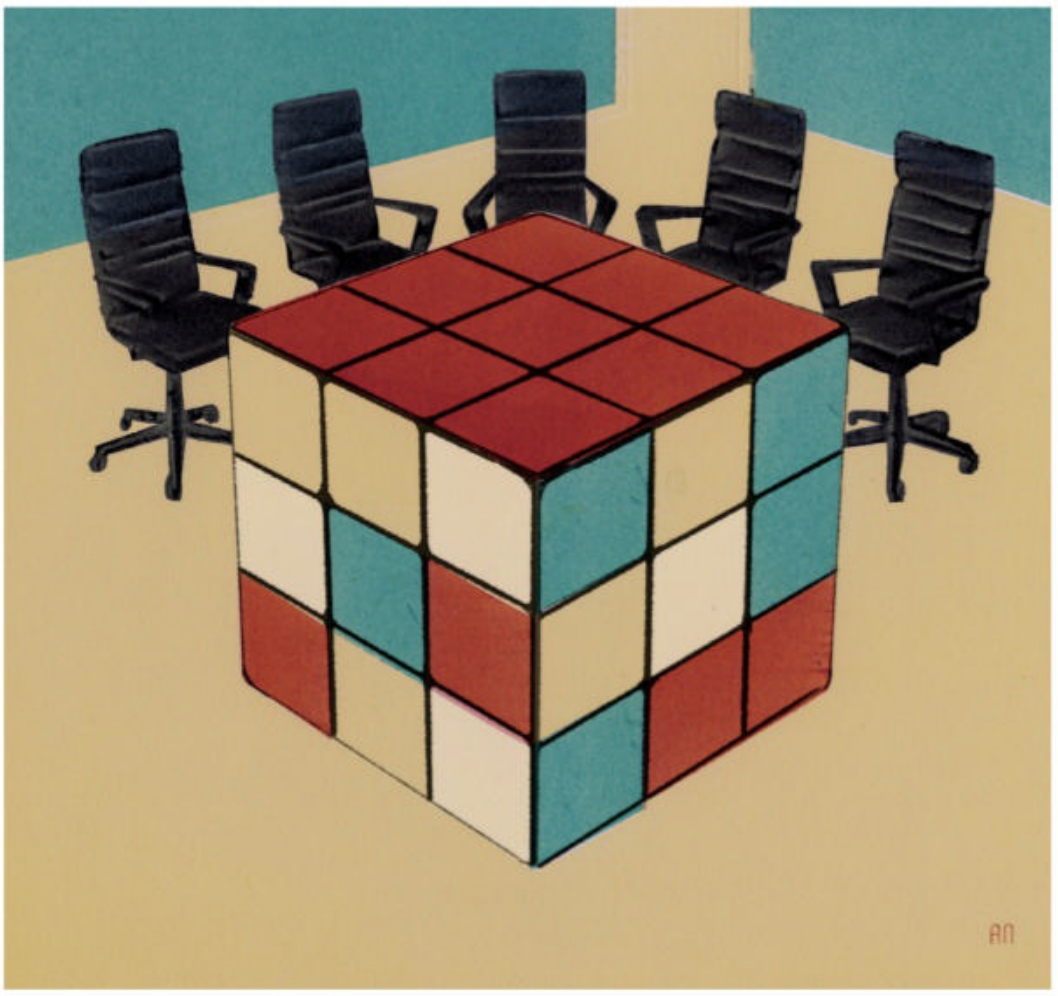
One of the biggest obstacles to effective decision-making is failure to define the problem well. Invoking the power of narrative and a simple story structure can help ensure that teams are solving the right problem.

By Arnaud Chevallier, Albrecht Enders, and Jean-Louis Barsoux

LIKE MANY COMPANIES AT THE END OF 2021, a small European precision toolmaker was having trouble hiring and retaining talent. The executive team had a solution: Create a more attractive social space to encourage informal collaboration. But when the head of human resources presented the plan to the board (which included one of this article's coauthors), the directors were puzzled. They didn't know what problem the redesign was supposed to solve.

In retrospect, their confusion was understandable. The executive team had not spelled out the extent of the company's recruitment challenges or made clear the link between the social space and attracting talent. Rather than seeking approval for the new space, they should have been discussing the best way to make the company a more attractive place to work or, more broadly, how to assemble the talent they needed given the expanding competition for talent across industries.

This is a familiar pattern we have encountered in our teaching and executive consulting. In the face of complex problems and strategic decisions, executives often choose the wrong problem to solve. They focus on



Alex Nabaum / theispot.com

symptoms instead of causes, base their thinking on false assumptions and artificial constraints, and overlook key stakeholders. The answer, we have found, is to change the way the problem is defined. By doing so, business leaders can significantly expand their universe of alternatives and identify radically better solutions.

Seeking Problem Solvers

To find better answers, it is necessary to ask better questions. This is called *problem framing*. Often neglected, this initial step in the decision-making sequence sets the trajectory for generating alternative options. It is critical for two reasons: It can reveal new possible solutions, and it avoids wasting time, money, and effort on half-baked ideas.

In our study of more than 700 international executives, 60% identified poor problem formulation as one of the two most prevalent barriers to effective problem-solving in their organizations. (The other is insufficient stakeholder engagement.)

An effectively framed problem is simple to understand, which may explain why executives often underestimate the effort that good problem formulation requires. As with any high-order activity, it takes mastery to make it look simple. Executives don't realize how tricky framing can be until they try it. To compound the challenge, plenty has been written on the importance of framing, but there's been little concrete guidance on how to do it. Senior executives are especially prone to overestimating the value of experience as a guide to solving novel challenges. They come to our classes thinking they're skilled problem framers only to realize their deficiencies when presenting to their peers. Their framing efforts go astray in predictable ways.

THE RESEARCH

- The authors surveyed more than 700 IMD executive program participants who identified their biggest decision-making challenges as focusing on the wrong problem and not taking stakeholders' perspectives into account.
- The authors piloted their story framework approach with program participants and then validated the methodology in both for-profit and nonprofit organizations.

Framing Fails

When executives get stuck on a complex problem, they're often urged to "think outside the box" and redefine the assumptions and constraints that hold them back — in short, to change their framing. Although executives are familiar with the concept of framing, in our work with them we've observed three recurring errors.

1. Assuming everyone sees the same problem. The biggest pitfall comes when executives take for granted that all stakeholders have the same intuitive understanding of the problem. This is hardly ever the case.

In our opening example, the HR chief reasoned that creating a new social space would make the company a more appealing place to work. But this was only one aspect of the challenge of attracting and retaining talent. He did not propose other alternatives — such as investing more in employee development, improving the company's HR marketing, or devising better salary and benefits packages — to prompt discussion of which approach would offer the best return on investment.

By default, we frame problems without a great deal of thought, using routines, heuristics, and experience to bypass formal analysis. We instinctively recognize the type of problem before us and reach for familiar solutions. This makes sense for problems that are urgent, recurring, and low risk, where experience is most likely to lead to a good answer.[1] The trouble starts when we try to apply the same approach to problems that are complex, novel, or high risk.

When relying on intuition, cognitive biases (such as overconfidence and confirmation bias) can muddle the decision-making process. The deep smarts that enable people to discern problems and propose instant remedies in their domains of expertise quickly become a liability outside it.[2] The French call this *déformation professionnelle* — the tendency to see any problem through the distorting lens of one's professional experience. We overestimate the relevance of our experience and underappreciate what we don't know. However, complex strategic problems require new perspectives and options, not just what has worked in the past.

Of course, executives cannot afford to turn every decision into a project, so they need to be discerning about the types of decisions that warrant such investment, homing in on those that cannot be easily undone.

2. Targeting the wrong problem. Even when someone makes a conscious effort to articulate the problem and not rely on instinct, they might frame it too narrowly or too broadly.

In class, we show participants a cartoon of a company's covered parking facility that is so jam-packed with cars that no one can get in or out anymore, and we ask, "What is the company's problem?"

Many come up with skewed or narrow frames: *How do we increase the parking capacity? How do we reduce the*

The story framework highlights the critical pain points and lays bare assumptions.

demand for parking? How do we incentivize people to not come by car? These are not just definitions of the problem; they are also solutions in disguise: The frame already indicates a preferred set of solutions and closes off alternative ways of addressing the situation.

Others propose frames that are too broad: *How do we fix the parking lot problem?* (Is it unsafe, too far away, dirty?) *How do we get people to work?* (This expands into other areas that are irrelevant.) Or even, *How do we get all the employees to do their jobs?* (This is too generic and opens up tangential issues like motivation and working from home.)

An effective frame captures the essence of the problem. If it's too narrow, it risks being ineffective by focusing on just one of the drivers, such as demand for parking spaces, and missing important or emerging issues altogether. If it's too broad, it risks stretching attention and resources across too many concerns, including ones that have little or no relevance.

In the car-park problem, a good formulation could be, *How can we decongest our parking lot?* or *How can we align parking spaces and parking needs?* These frames open the opportunity for alternatives that address both supply and demand issues and hybrid solutions that combine elements of both.

3. Pushing a single perspective. Another common trap is unilateral framing. Having defined the challenge alone or with like-minded colleagues, problem solvers are often blindsided by objections from critical stakeholders — especially those whose support they had taken for granted.

A cognitive bias known as the *false consensus effect* leads us to overestimate the extent to which others will perceive a situation in the same way we do.[3] As a result, we underinvest in engaging others or testing our frames.

This was the situation in our opening example. When the HR chief presented the project to create a new gathering space, he expected to discuss what kind of budget the board would approve and not the underlying rationale for the project, which he assumed was self-evident.

The HR chief explained *what* the executive team was debating but not *why*. The board's unexpected challenge reflected the HR chief's failure to prepare board members for the initiative or to reflect their concerns in the solution. While the board didn't have a preexisting view of the recruitment problem, its members believed that the social space only indirectly tackled the issue and that there were more-targeted and potentially lower-cost solutions. Had the board's perspective been integrated in defining the problem, the executive team could have considered a broader set of solutions that reflected the board's concerns.

There are other traps in strategic decision-making, such as failure to consider innovative solutions or simply choosing a bad one. Our point is that effective framing is more important and more difficult than it seems. A process is necessary. We propose a two-part solution: Frame and reframe.

Creating an Initial Frame

Research and our experience with executives show that using a basic story framework can help people make sense of complex information. Storytelling is not only useful for persuading others but also valuable for thinking through ambiguous information.

Too often, executives come to us with a bunch of ideas but no clear understanding of the problem they are trying to solve. At the other extreme, they present a bunch of different issues that are somehow related, but without clarity on how they connect with, contradict, or complement each other.

Storytelling makes it possible to structure this complexity by summarizing the problem in the form of a single overarching question — a *quest* — that will lead to the solution. An effective quest has just three elements:

- ***A hero* — the main protagonist.** Depending on the challenge, it could be a single person, a team, an ad hoc project group, a unit, or even the whole organization.
- ***A treasure* — the hero's aspiration.** This captures the one overriding goal, be it transforming the company, expanding into new markets, upgrading a team, or changing careers.
- ***A dragon* — the chief obstacle.** This is the complication preventing the hero from getting the treasure. A compelling dragon creates a strong hook and a shared understanding of the challenge to be faced.

Pulled together, these three elements define the quest, which takes the form, *How may [the hero] get [the treasure], given [the dragon]?* A quest works best with one hero, one treasure, and one dragon — otherwise,

The Do's and Don'ts of Framing

THE QUEST IS A CLASSIC STORY-telling technique to help structure a problem. Executives typically make several mistakes as they construct their own quests. Here are five things to keep in mind.

- **REMEMBER THE DRAGON.** The hero and treasure establish the protagonist and the goal. But one key ingredient is missing: tension. To identify the chief barrier to a goal, introduce the dragon with "However ..." or "But ... ."
- **DON'T USE "AND."** Each part should have one element, and only one. If there are more, they should either be reconciled under an umbrella term or divided into separate challenges. If there are several potential dragons, choose the one that creates the most relevant tension.
- **EXCLUDE UNNECESSARY DETAILS.** A snappy frame is more useful than a detailed one. Include only what is needed to tell a coherent story, excluding everything else.
- **BE CONSISTENT.** Use the same terms when moving from the individual elements to the overall quest. Synonyms and ambiguous phrasing only cause confusion. The quest should be self-contained and easily understandable, even by a novice.
- **DON'T AIM FOR PERFECTION.** The first attempt at framing is just a communication tool. There is no such thing as the "right" frame — just a better one. Chances are that sharing the frame with others will reveal new angles and false assumptions that help improve it.

it's more than one story. When someone is dealing with multiple dragons, it's better to ask whether there is a single challenge or whether it might be more sensible to place the different dragons into separate problem frames. (See "The Do's and Don'ts of Framing.")

What's more, it's important that all elements are present when defining a problem. In the car-park problem, we did not mention any constraints to the challenge (the dragon) in terms of space, money, time, or conflicting agendas. A more realistic framing of that quest might look like this: *How can we as an organization provide adequate parking for our people, given our limited funding?*

This story framework helps get to the heart of the challenge. It highlights the critical pain points and lays bare assumptions. Explicitly listing the hero, treasure, and dragon forces consideration of all that is necessary, but only what is necessary. It holds decision makers accountable for the choices and sets up more meaningful conversations with stakeholders.

We've applied this approach to hundreds of problems in a wide array of disciplines, including business, architecture, physics, and engineering, and have yet to meet a problem that can't be summarized in this way. It helps explain in simple terms even the most complex problems, but that simplicity can be deceptive. Getting to such a simple quest will take significant effort, particularly for the most complex problems.

Developing an initial frame is good, but the real value comes from sharing it with other stakeholders early on.

Framing a Better Quest

One trap to avoid when using this method is the temptation to stick with the first quest that comes to mind. Developing a sound quest is an iterative process, and going deeper into understanding a problem requires stress-testing the quest.

The strength of the story template is that it formulates the problem in a concise way that is easily understood by others — decision makers who lack detailed knowledge, colleagues in other departments, outside stakeholders such as partners or suppliers — without overwhelming them with details or context. They can add perspectives and question premises, constraints, and blind spots. Bringing them in at the framing stage gives them a chance to be heard before anyone grows overly attached to a particular set of alternatives or a specific solution. Research also suggests that a diversity of perspectives promotes a more exhaustive exploration of alternative solutions and positively affects the quality of decisions.[4]

Reframing can start with considering the initial approach to the problem and asking, "Why would this not be the best quest to undertake?" The answer may be that you've identified the wrong hero, treasure, or dragon.

Picking the wrong hero can result in efforts that fail to gain traction. This is a situation we observed at Europe's largest paper and board maker, Stora Enso. As demand for paper plunged, the executive team wanted

to renew the business and diversify into new businesses based on wood-fiber products. But the top executives — middle-aged industry veterans, all male, and all Scandinavian — found it impossible to come up with outside-the-box ideas.

Jouko Karvinen, then CEO, realized that the executive team was the wrong hero. It was ill-equipped to identify or explore emerging business opportunities in adjacent sectors. Members were too invested in the choices and practices of the existing business. They lacked the individual openness and collective diversity needed to rise to the challenge.

The company handed responsibility for the effort to a new, more diverse team that comprised a dozen up-and-coming employees, among them women, non-Scandinavians, and people with experience in other industries. This team was given free rein to challenge the status quo. Karvinen defined their mandate: "I don't want PowerPoint presentations giving advice about what we *could* do. I want [you] to come back with ideas that we can implement and requesting to start up a new business."

In our narrative framework, the second, more diverse team was the hero, transforming the organization into a renewable materials company was the treasure, and the original executive team's lack of experience and skills in these new areas proved to be the dragon. Once the challenge was viewed in this way, the new team's recommendations, along with important system and process changes, enabled Stora Enso to transform itself into a leading provider of renewable products in packaging, biomaterials, and wooden construction — as well as a developer of new textile fibers that use tree cellulose, in a joint venture with H&M and Ikea.

Focusing on the wrong treasure can mean that efforts won't yield the desired results. Consider Switzerland-based Logitech. Piggybacking on the PC revolution, the developer of high-end peripherals — including mice, keyboards, speakers, and webcams — delivered 39 consecutive quarters of double-digit growth.

In 2008, Gerald Quindlen became CEO just as smartphones (and, later, tablets) began to disrupt the desktop market that accounted for 89% of Logitech's revenues. In his quest narrative, he was the hero who had to overcome the dragon of the dwindling PC market to achieve his treasure — a return to double-digit sales growth.[5] To do that, he bet heavily on an acquisition in videoconferencing and a partnership with Google on its smart TV, but neither of the deals worked out as expected. The company spread itself too thinly and lost its focus on its core capability: innovation.

In the process, Logitech missed obvious trends in peripherals — notably the GoPro camera craze — and lost market share in specialized accessories for gamers. It was also slow to respond to opportunities in the mobile device market. What new products it did release were not cool or exciting. Focusing on sales targets often meant tacking on new features to existing products without considering what the market wanted. Engineers became preoccupied with creating products that hit price points but didn't satisfy consumer needs or tastes.[6]

Quindlen was replaced as CEO in January 2013 by Bracken Darrell, an industry outsider who had a different treasure in mind. "We're going to become a design company" and put the user at the heart of Logitech's innovation activities, he told employees.

"We didn't lose the capability, we lost the expectation," Darrell told investors. "We stopped expecting to have great products."[7] After overcoming some initial resistance from engineers who feared that Logitech might become a "fashion" company, the design-led strategy opened the way for a host of innovations in different product categories.

While sales growth has the advantage of being concrete and measurable, it is less effective as a treasure. It has little power as an aspirational goal and does not provide guidance, focus, or inspiration on how to move forward. In contrast, the goal of becoming a design company, with its focus on user needs, provides a much stronger sense of direction.

Since Darrell's appointment, Logitech has become much more agile, responsive, and innovative. One measure of the change is its annual haul of prestigious design awards: It has won more than 250 since 2015. In the same period, revenues have more than doubled while profits have increased thirteenfold and share prices have increased ninefold.

Reflecting on the tendencies of some CEOs to focus on financial performance, Darrell noted, "If you start in the wrong place, sometimes you get to the wrong place."[8]

Picking the wrong dragon means wasting energy on pointless battles. That's what happened to Christine Christian, CEO of Dun & Bradstreet's

The key to developing a useful model is to include all that matters, but *only* what matters.

Australian operation. As the hero, her team spotted an opportunity to provide additional risk-management solutions in response to a forthcoming change in Australian tax regulations, a treasure that was a once-in-a-lifetime, windfall opportunity. The subsidiary was well positioned to capitalize on the opportunity, but doing so required funding to make a sizable investment in a call center.

The dragon, as Christian saw it, was convincing the head of the Asia-Pacific region to allocate funds from his limited budget to an initiative that had no strategic value for the other subsidiaries in the region. When her boss turned down the request, she was so frustrated that she wanted to resign. But her team persuaded her to consider alternative approaches, such as seeking funding from outside the regional group. That proposal was approved, and the team found several partners eager to pursue the opportunity.

Christian and her team had taken too restrictive a view of the obstacle. The need for *internal* funding was in fact a dragon that could not be surmounted, but securing general funding was one that was more easily overcome. The narrow framing led Christian to ask her boss the wrong question. Addressing the real dragon led to finding an external partner with a shared interest in the Australian market, which proved to be a very lucrative strategic move for the subsidiary.

In each of these cases, questioning the logic and assumptions enabled the protagonists to reframe the challenge, thereby opening a whole realm of new strategic opportunities. The quest format is a key lever for formulating problems that the organization can actually solve.

Why Stories Help

Statistician George Box famously said, "All models are wrong, but some are useful." The key to developing a useful model is to include all that matters, but *only* what matters. This is how the story approach helps with problem-solving: by providing a straightforward way to define and clarify the problem to be solved. A concise description of the quest can lead to a clear strategy for moving forward.

The brevity of the quest narrative is part of its strength. Uncluttering exposes the chief pain point, the blind spots and constraints, and assumptions about causality. It makes it easy to share and to challenge the logic.

The simplicity of the template also makes it something that's easy for business leaders to recall and useful in identifying what's missing from or confusing in presentations from team members. It makes it easy to decide whether new evidence requires changing leading actors, goals, or obstacles. In short, it helps leaders sift out the background information so that they can focus on the essential components of the problem. Indeed, executives can use the quest narrative to educate teams on how to present problems.

The story ingredients depersonalize criticism when people question assumptions, blind spots, and artificial constraints. Tough questions like *"Why you? Why this? Why now? Why haven't you ...? Aren't you missing ...? Who will resist?"* are easier to voice and less likely to trigger defensiveness when couched in terms of a hero, treasure, or dragon.

Finally, stories tap into our playfulness. The language of stories makes exchanges more engaging. It contributes to creating a safe environment. It is liberating, putting team members into a more expansive and upbeat frame of mind when discussing problems. It awakens our creativity. Of course we could slay the dragon, but what else could we do? Circumvent it, neutralize it, or turn it into an ally?

Beyond being an analytical challenge, complex problem-solving is also a people challenge. It requires input, different perspectives, involvement, and buy-in from other stakeholders. Integrating outside views obviously is important when making recommendations for a specific course of action, but it is critical when deciding the appropriate way to frame the problem. When the audience agrees with your framing, it becomes much easier to persuade them of your solutions. ■

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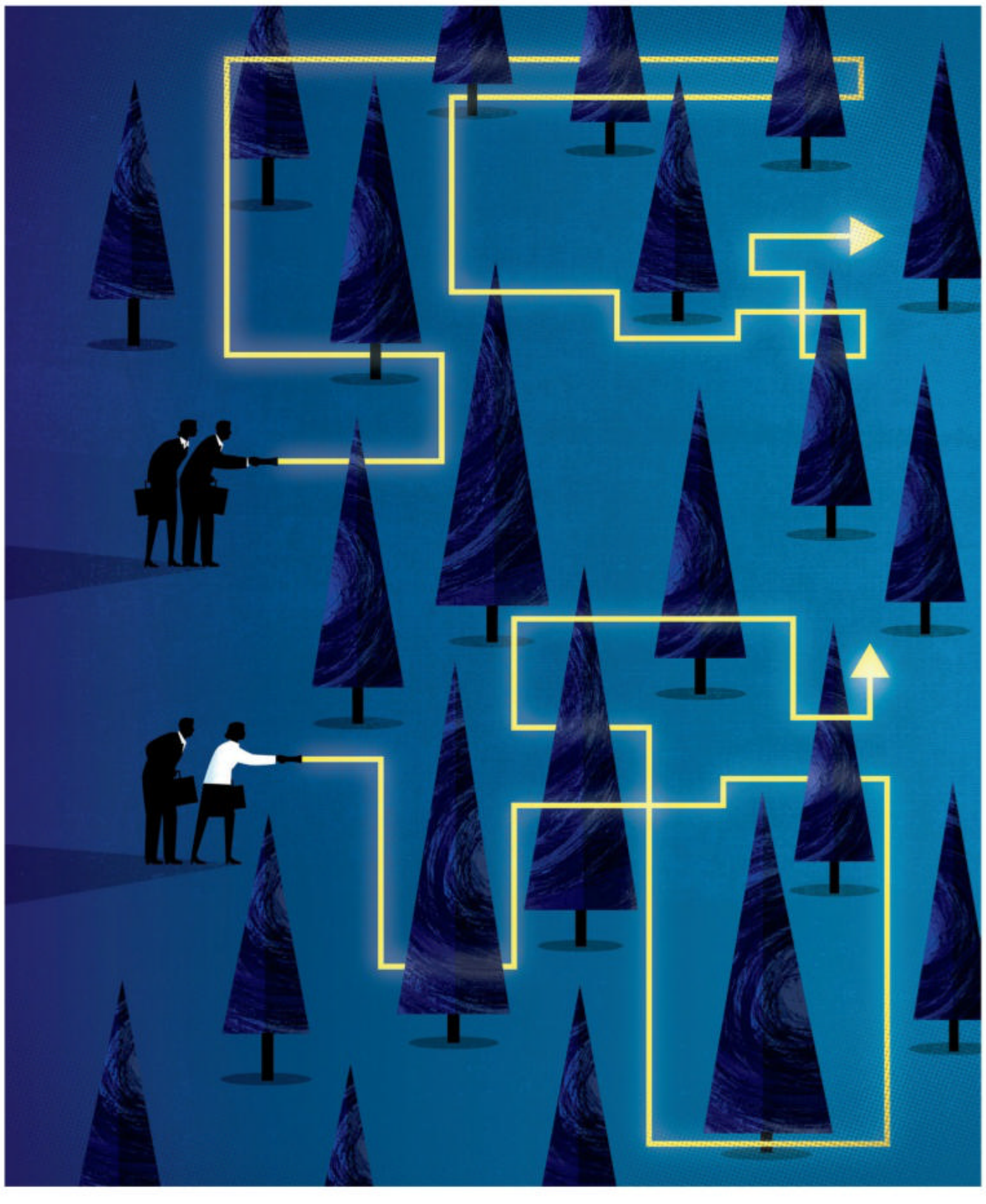
Why Companies Should Help Every Employee Chart a Career Path

Providing career development to all employees requires a commitment to clarifying pathways for growth and giving everyone opportunities to build new skills.

By George Westerman and Abbie Lundberg



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ASK AN HR LEADER whether their company is good at career development, and they will likely say that it is — and then they'll talk about the programs they've designed for high-potential employees.

Ask them how well the company supports the rest of the workforce, and their answer will likely change. Some will say that they expect managers to be responsible for developing their people. Others will say that employees are empowered to "own" their own career development. The more transparent leaders might add that their approach works for some employees but not for most.

Those approaches might sound good but often don't live up to their promise. This is a problem for companies, especially when it's difficult to find and retain skilled employees. Leaders must do much more to help employees see a future with the company and a path to advance toward that future.

Fortunately, a small but growing number of companies are finding ways to improve career development for all of their interested employees. Doing this at scale does not require the same level of investment that the company provides to its high-potential future leaders. It does,

however, require the use of modern tools and a coherent approach that helps employees see a path forward, learn and practice the competencies they need, and receive solid feedback and coaching along the way.

In this article, we'll share insights from a survey of more than 1,000 workers and interviews with talent and learning leaders at more than 25 organizations who are figuring this out.

Let's Stop Kidding Ourselves

It's convenient for senior executives who make decisions on HR policies and investments to delegate employee development to line managers or to spin a lack of organizational support as empowering employees to own their professional growth paths. Yet neither course is a very effective solution to a problem that requires a more systematic approach.

Requiring managers to support career development as well as performance is by far the most common approach taken in organizations. Unfortunately, even the best-intentioned managers may not know what growth paths are available beyond the function or division they know best. And then there are the managers who don't give mentoring enough attention, mentor only their favorites, or hoard talent by discouraging their best workers from exploring other options. Furthermore, employees may fear being penalized for disloyalty if they ask their current boss about potential roles outside of their unit. So while the company can say that every manager is responsible for supporting employees' career development, and the process works for some employees, most get much less help than they need.

Asking workers to own their own professional growth can sound good to the senior executives who approve HR investments and manage others in leadership roles. After all, these leaders are exactly the types of people who have been able to own their own careers. They are talented, hardworking, and ambitious people who were willing to go the extra mile to get ahead. They may or may not remember the help they got along the way through high-potential training programs, a great boss or mentor, or a leader who hired them based on potential when they weren't quite qualified for the job. Unfortunately, when bosses believe a self-service approach will work for everybody, it's tempting to blame the employee and not the process when it doesn't work.

Given the prevalence of the two approaches we've described here, we weren't surprised to find that many workers feel that they need better support for career development. The individual contributors we surveyed were much more likely than executives and managers to say that a lack of good career advice has hurt their career (49% versus 35%). Two-thirds (67%) said advancing their careers is very important, and a quarter of respondents believe they will be more likely to do so at a different employer.

This represents a crisis for companies seeking to find and hold on to talent. In fact, in a Pew Research survey, 63% of people who changed jobs in 2021 cited a lack of advancement opportunities as a reason.[1] And a 2022 McKinsey study noted that a lack of career development and advancement was the most common reason given for quitting a previous job.[2]

What's more, the landscape has become more challenging. Much more attention is going to lateral or diagonal opportunities — a career lattice — rather than just climbing a particular career ladder. More than a third (35%) of respondents to our survey said their next job will take them off their current career path. Yet, according to research from Willis Towers Watson, only 29% of employers outlined lateral career paths, and only 33% provided beyond-the-job growth experiences, such as job shadowing and rotational assignments.[3]

Building a Coherent System for Broader Career Development

Most companies know what is required for career development: They're already doing it in their high-potential leadership programs. These often costly programs typically offer detailed assessments, special training opportunities, stretch assignments, network building, and regular coaching. Together, they create a mutually reinforcing system of three

THE RESEARCH

- The authors set out to investigate a gap, discovered in earlier research, between the career development support many companies claim to provide and the lived experience of the typical worker.
- They conducted an online survey of 1,016 employees across the United States, and interviewed more than two dozen corporate talent and learning leaders.
- They drew from ongoing discussions with a small number of corporate leaders and academic colleagues to examine the findings, build insights, and spur further investigation.

If informal networks are diverse enough, they can also help uncover new opportunities.

key elements: visibility into opportunities and paths, the means to learn and practice, and rich feedback and coaching.

In our research, we encountered few examples of companies providing all three elements of the career development triad for workers not classified as high potential. However, we did see several examples of companies making progress on each of the three elements, and we'll describe how they can integrate the elements into a career development system that works at scale.

Make opportunities and pathways visible. Employees can't explore growth opportunities that they can't see. Often, even the HR people don't know what is available or what is possible for workers — especially across regions or lines of business. Many big companies have "already set up for both ends of the supply and the demand, but there's just no visibility between the two," said Julie Dervin, global head of talent at Atlassian and former head of global learning and development at Cargill.[4] "You may have a business sitting in North America and have no idea that your sister or brother business over in China or the Netherlands is in search of a certain set of skills for a certain project. There's no visibility there to match that up." An HR leader at another company said it more directly: "When we need skills for certain positions, we go outside. There are tools and resources to go externally and find a skill. It's easier than looking internally."

Visibility alone isn't enough. Internal job postings may highlight skills an employee doesn't have, without providing clarity on how to bridge the gaps. HR professionals, managers, and employees must all understand which opportunities are relevant, given a specific set of experiences and skills. "You have to do a really good job of deconstructing that work so that you can tell the story of, 'Hey, this is why this role actually is transferable,'" said Christopher Lind, vice president and chief learning officer at ChenMed.

GE Digital has an online tool called Career Discovery. Once employees enter their capabilities and interests, it shows them other roles in the company that might be a fit for them, even if those opportunities are not on their current career ladder. The tool also shows competencies employees might need to gain and where to look for training opportunities.

This "push" rather than "pull" approach is important. "If you're somebody that doesn't ask questions and maybe is a little bit more passive, most likely you'll start to look externally because there isn't transparent visibility into opportunities," said Lyndsey Havill-Cochrun, area vice president for people insights at BetterUp.

At the University of Pittsburgh Medical Center (UPMC), a $24 billion health care provider and insurer with 92,000 staff members, HR works closely with leadership to establish dozens of career paths. "And yet much of that information was kept within HR," said Tony Gigliotti, senior director of talent management and organizational development. "This information wasn't as easily accessible to the employee as we'd like. Now, through technology, we are transparently sharing both vertical career paths and alternative roles." UPMC recently launched the Explore Careers tool for every employee through its cloud-based HR system. "Employees can log in and see 'Where did people go who were in my role? What roles are in my job family, and who is in those roles?'" With that intelligence, employees can choose to contact people in specific roles to learn more, or they can review available job postings for those roles.

Unilever offers Discover Your Purpose workshops to help employees reflect on their experiences and goals and then create development plans for the next six to 18 months. Based on their plans, employees can access a variety of internal and external resources to build skills and certify their expertise.[5]

If informal networks are diverse enough, they can also help uncover new opportunities. When employees get to know people in other roles, they can make better choices about what's possible in their own careers. They can use these networks to explore a job change with people who are already in those roles — to understand what the job is like, how their skills and interests align, and how hard it might be to bridge the gap. These networks can also help a manager get comfortable with the idea of hiring an internal transfer who needs a growth opportunity rather than onboarding an external candidate who appears to already have the necessary skills.

So companies should help employees develop broader networks — just as they do with cohorts in high-potential programs. Accenture teaches in

global classrooms, where learners from numerous countries work together on case studies, simulations, and group projects. At DBS Bank, employees are encouraged to share their expertise in peer learning sessions, and they build new connections through the sessions they teach and attend. As many employees have shifted to remote work, targeted global collaboration opportunities such as these have become possible in virtually every company.

Provide opportunities to learn and practice. While visibility into potential new roles is important, it is not enough. Employees need ways to learn the different skills required by their new roles.

Global financial services company Allianz uses its learning platform to match required skill sets for specific positions to the skills an individual already possesses. "Our state-of-the-art global learning platform recommends trainings and other learning opportunities to our employees based on their individual skills and learning preferences, supported by AI," said Renate Wagner, member of the board of management responsible for the Asia-Pacific region, mergers and acquisitions, and human resources. "This also contributes to strengthening key competences and skills in Allianz, for example, with regard to data and IT."

UPMC defined learning pathways for five types of employees: new employees who need to onboard effectively into their roles, existing employees who want to gain additional expertise, aspiring leaders, new leaders, and current leaders. Each pathway focuses on developing professional skills for role success and personal skills to enhance well-being. According to Jessica Buechli, senior director of learning and development, "Technology bundles each learning pathway, and the employee can easily enroll into a pathway and follow it at their own pace."

Outlining paths and courses that can teach key skills is a good start, but employees also need to practice their new skills, especially for jobs outside of their current chain of command, and to reflect on the experience. Through practice, individuals make progress and learn from mistakes. Reflecting on both can help them continually advance toward their goal of learning a specific skill. Employees at UBS and DBS Bank practice learning through games, simulations, or projects. Customer support representatives at Fidelity Investments can learn a new skill in the morning, practice it in live customer calls (with a manager observing) in the afternoon, and then reflect on the experience with others who are learning the same skill. Northeastern University is piloting a program with employers to design real-world class projects that are directly relevant to each student-employee's particular context. An accounting student can take on some budgeting or forecasting tasks for their boss, for instance, or a machine learning student can solve a problem for another unit of the company, opening potential doors to move into a new role.

Stretch assignments are another good way to provide practice opportunities. These do not need to entail changing jobs — at least not at first. However, just as companies need to provide visibility into full-time opportunities across the organization, success depends on the employee, or their manager, knowing how to find these assignments.

Formal rotational programs can play a useful role, and some companies include them for new hires or in high-potential leadership programs. However, this type of intentional support for changing roles is much less common for most employees, and we have not seen such programs at scale for experienced workers.

Helping employees explore new opportunities is in a company's own best interests. While it may seem easier and less risky to hire skills externally than to take a chance on developing an internal candidate, such an approach can exacerbate talent gaps. Ignoring internal candidates shrinks the pool of potential applicants for open slots while also making current employees feel that they must look outside for opportunities. UPMC is addressing this challenge by helping managers see the opportunity in internal hiring. The company recently expanded the employee self-evaluation, which is part of the annual performance review, with questions aimed at better understanding an employee's career intentions. Now, employees can outline their career goals, as well as the resources, tools, and education that they'll need to achieve those goals. This feedback will catalyze career conversations between the employee and their leader and, ultimately, open a safe space for employees to explore their career opportunities within the organization.

Other organizations are using technology to match workers, managers, and tasks in an internal marketplace, but hiring managers have to be open to adopting this approach. In 2018, Schneider Electric launched an open talent market where managers can list opportunities for short-term projects, full-time positions, or mentorships, and workers can engage with the ones that interest them. The short-term assignments and mentorships enable employees to try out stretch roles and determine whether

they might be a good fit for a future full-time role. Managers embraced the marketplace during the pandemic, when they weren't able to hire people for projects that needed to be done.[6] The internal marketplace also reduces risk for managers, who gain access to a diverse pipeline of employees they can get to know on short-term projects before committing to hiring them long term.

Deliver rich feedback and coaching. Providing performance feedback is an essential part of learning. Employees gain the opportunity to hone their skills when they can see more clearly what they are doing well and where they can improve.

Pernod Ricard implemented a program in 2018 called Let's Talk Talent. The program repositions the performance management process with the employee at the center, and managers functioning as developers and career coaches. Employees are able to create a talent profile that includes "their career history, what they've achieved, and where they want to go," said Lani Montoya, senior vice president of HR for Pernod Ricard NA. That person's manager as well as the global talent management team can see this and discuss the person's future with them. The expectation is that such conversations happen regularly, "but we know for sure that they happen on an annual basis as part of our performance management process." And if the employee is not getting enough career advice from their manager, they can go to the global talent team for guidance.

"Good companies make sure people managers are very clear that part of their role is to have career conversations with their employees," said Dervin. This includes understanding what their employees' career aspirations are and being able to counsel and guide them in how to develop the skills they need — "either to perform more effectively in their current role or to start building skills that will set them up for their next role," she said.

Telling managers to do it and ensuring that they do it well are two different things. It's up to HR not only to establish the policies but also to ensure that managers are able to implement those policies effectively. Just asking a manager to document that career discussions took place is not enough. HR should also ask employees how they feel about the help they're getting from their managers.

While employees need feedback and coaching for their careers, managers may need feedback and coaching on their own coaching abilities. "Even the best-intentioned leaders need help and support," said UPMC's Gigliotti. "Along with our HR and learning and development colleagues, my team works with people leaders to design approaches to developing and retaining critical talent. Supervisors are fearful of losing talent, especially with the Great Resignation affecting so many industries, including health care."

UPMC implemented check-in tools to help facilitate the feedback process. With the Anytime Check-in, anyone can easily send feedback to anyone else in the organization at any time — for example, after working with someone on a project or seeing a colleague make a noteworthy contribution. They can make the comments visible to only the employee or to the employee's supervisor as well. In addition, supervisors can maintain their own private notes using Anytime Check-in and then reference them at annual review time. Meanwhile, employees can get honest feedback in real time from peers as well as bosses.

Putting the Elements Together

Our research showed that many companies are implementing pieces of the career development triad but that few have integrated the three into a successful employee development system at scale.

One company that has is Amsted Industries, a global, diversified manufacturer of industrial components for rail, commercial vehicle, automotive, and construction and building applications. The company's career development framework, which each business unit customizes for its context, is designed to give each white-collar worker two types of reviews regularly. The first is typically a discussion between the employee and their manager about performance in the current role. The second is a formal development review and mentoring process led by a senior business manager who is a peer of the employee's manager but not in the employee's direct management chain.

The company takes this process seriously; leaders

Beth Israel Deaconess Medical Center grows people from low-skill nonmedical roles into higher-skill and higher-paid medical ones.

are evaluated not only on the performance of their team but also on their development of specific people outside of their teams. In addition to regular informal discussions with their development manager, the employees have a formal development meeting every year with a committee that includes their direct manager, their development manager, and those managers' bosses. The employee discusses their career objectives, their plan for development, what they've achieved toward their plan, and the support they need to take their next steps. After that interactive discussion gives the committee a better understanding of the employee's goals, the employee leaves and the committee members discuss what will best help that person get there.

The committee develops a draft plan for career advancement, which the development manager takes to the employee. The employee has the ability to reject or accept the plan. If it's accepted, the leaders assign coaches and mentors as applicable and work with the employee to finalize the details.

This process facilitates horizontal development and talent sharing as well, given the involvement of the manager's peers. If an employee expresses interest in a different function, another manager might have a project they can get involved with. This is not purely altruistic; the peer managers benefit by having someone from outside their unit offer to help with a project. In addition, the company ensures its commitment to the process through peer accountability among development committee members and by making development performance an important part of each manager's own performance rating, alongside the performance of their unit.

You might not feel your company can invest as much as Amsted has to help employees develop their careers. But that shouldn't stop you from building stronger career development processes where possible. One place to look is positions that are the hardest to fill or have the highest turnover risk, where the return on investing in career development will likely be more apparent.

Beth Israel Deaconess Medical Center (BIDMC) in Boston routinely grows people from low-skill nonmedical roles into higher-skill and higher-paid medical ones that are difficult to fill but do not require years of academic training. BIDMC identifies internal candidates who have been strong performers and offers them a chance for a better-paid role with a better career ladder, such as a central processing technician, medical lab technician, or medical coder. BIDMC works with a local community college to provide training aligned with the employee's work hours. It also pays for the training and helps to coach and support the employee along the way.

It's a win-win arrangement for employer and employee. BIDMC has now systematized the approach more broadly, with a goal that no employee will be stuck in a job that's not going to lead anywhere. Six months after an employee starts working at BIDMC, they receive an email prompting them to start thinking about their career with the organization. It lists all of the opportunities that are available and encourages them to connect with the workforce development office to learn more.

IT'S POSSIBLE TO HELP EMPLOYEES develop in their careers without breaking the bank, forcing them to have awkward conversations with bosses who may not want to help, or telling them to do it on their own. But it requires a systemic approach. We've shared examples of companies that are making progress in that direction. They are not just creating stand-alone tools and processes. They are linking those elements into a self-reinforcing tripartite system that can help every employee develop without overburdening HR budgets or managers' time. This intentional approach to career development is good for the employees and for the companies that employ them. ■

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TECH AT THE EDGE
[Web3]

The Quiet Corner of Web3 That Means Business

While the metaverse still lacks legs and crypto stumbles, managers who are keeping an eye on Web3 can learn from promising implementations of decentralized credentials.

By Mary Lacity, Erran Carmel, Amber Grace Young, and Tamara Roth

The Quiet Corner of Web3 That Means Business

Mary Lacity, Erran Carmel, Amber Grace Young, and Tamara Roth pp. 20-26

Key Insight: Early adopters of decentralized credentials offer lessons for managers who are looking at the potential of Web3 technologies.

Top Takeaways: There's a lot of talk about Web3, the blockchain-based vision for a future internet whose ingredients include cryptocurrencies, non-fungible tokens, decentralized autonomous organizations, and virtual worlds within the so-called metaverse. It's early days, but one of the more promising applications is decentralized credentials. Every organization manages credentials in three ways: as an *issuer* (handling identity management for employees, for example), a *holder* (such as having a taxpayer ID number), and a *verifier* (such as verifying proof of credentials from suppliers). Today, managing credentialing can be a multistep, manual process that's expensive and time-consuming for organizations. The decentralized approach empowers individuals to control their own credentials via a digital wallet.

REPRINT 64317

TECH AT THE EDGE
[Artificial Intelligence]

The No. 1 Question to Ask When Evaluating AI Tools

Determining whether an AI solution is worth implementing requires looking past performance reports and finding the ground truth on which the AI has been trained and validated.

By Sarah Lebovitz, Hila Lifshitz-Assaf, and Natalia Levina

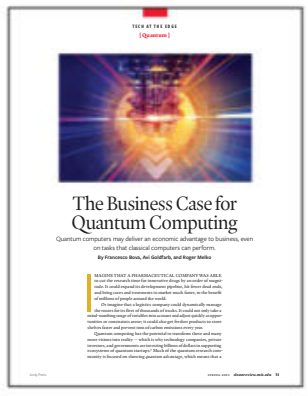
The No. 1 Question to Ask When Evaluating AI Tools

Sarah Lebovitz, Hila Lifshitz-Assaf, and Natalia Levina pp. 27-30

Key Insight: Understanding how AI algorithms are trained and validated can help decision makers pick the right tools and avoid risk.

Top Takeaways: Developers of many new AI solutions produce statistics showing that the tools make critical decisions with greater accuracy and efficiency than humans. But managers tasked with evaluating these applications need to peel back the layers of these performance claims and focus on what was used to train and validate the AI tool. What the authors call the *ground truth* is the material in training data sets that teaches an algorithm how to arrive at a predicted output. The critical question for managers evaluating AI is, is the ground truth really true?

REPRINT 64314


TECH AT THE EDGE
[Quantum]

The Business Case for Quantum Computing

Quantum computers may deliver an economic advantage to business, even on tasks that classical computers can perform.

By Francesco Bova, Avi Goldfarb, and Roger Melko

The Business Case for Quantum Computing

Francesco Bova, Avi Goldfarb, and Roger Melko pp. 31-37

Key Insight: Organizations should focus on the economic advantages quantum computers can deliver, not just their ability to perform calculations that their classical counterparts can't.

Top Takeaways: Much of the quantum research community is focused on showing *quantum advantage* — that a quantum computer can perform a calculation that is impossible on a classical computer. But by focusing on that, they risk overlooking good business cases for the technology, the authors argue. Enterprises should instead seek opportunities for *quantum economic advantage* — when a quantum computer provides a commercially relevant solution faster than a classical computer could, or when a quantum computer provides viable solutions that differ from what a classical computer yields. Optimization problems and those involving complex tradeoffs are particularly promising areas.

REPRINT 64319

Reimagining HR for Better Well-Being and Performance

Gabriella Rosen Kellerman and Martin Seligman pp. 38-43

Key Insight: Historically siloed talent and benefits teams should collaborate to proactively support employee thriving and mental health.

Top Takeaways: In an adaptation from their book *Tomorrowmind: Thriving at Work With Resilience, Creativity, and Connection*, the authors argue that because many HR organizations have evolved with separate groups for talent development and benefits administration, it can be difficult to develop and implement programs that could better support employee mental health and thriving. Benefits groups tend to focus on supporting employee health and well-being, while talent groups more often own programs that help employees develop new skills and capabilities. The authors argue that a unified effort will be required to help workers develop the psychological capabilities to thrive in the increasingly challenging world of work.

REPRINT 64316

Level Up to Strategic Data Sharing

Barbara H. Wixom, Ina M. Sebastian, Robert W. Gregory, and Gabriele Piccoli pp. 44-48

Key Insight: Strategic data-sharing practices can help organizations establish secure, governed, and scalable data-sharing initiatives.

Top Takeaways: Drawing from their research on digital initiatives at 30 organizations, including Schneider Electric and Elevance Health, the authors identified four key areas that organizations should focus on to advance their strategic data-sharing capabilities. These include increasing data liquidity to make data assets more easily available and combinable, and facilitating the fluid exchange of data assets through automated but flexible controls and oversight processes. These types of strategic data-sharing practices can help businesses better cocreate with customers, engage in novel partnerships, and pursue opportunities through digital ecosystems.

REPRINT 64308

Mining Underground Innovation

Jeroen P.J. de Jong, Max Mulhuijzen, and K. Venkatesh Prasad pp. 50-55

Key Insight: Companies need new mechanisms to surface projects that R&D workers have developed out of sight but that have potential value across the organization.

Top Takeaways: Many R&D employees proactively pursue unofficial innovation projects, thanks to the desire to effect internal change, meet a personal need, or explore a passion. Invisible to the company, these projects are often hidden treasures, particularly if they develop new capabilities that extend current technological limits or result in new patents, processes, or product components. Surfacing bottom-up innovation and providing recognition to these innovators can help companies take full advantage of this phenomenon. The authors recommend developing processes to bring these stealth innovations into the open, such as creating new idea-capture systems that resonate with inventors' needs and motivations.

REPRINT 64312

Rethinking Hierarchy

Nicolai J. Foss and Peter G. Klein pp. 56-61

Key Insight: Managers have to figure out when to intervene and "be the boss," and when to let employees handle problems themselves.

Top Takeaways: For all the hype around the idea of eliminating management to create agile organizations, corporate hierarchies have remained extremely resilient. Hierarchies can be the best way to handle the coordination and cooperation problems that are part of often messy human interactions. But that doesn't mean traditional, command-and-control organizations are right for the current environment. Today, companies need clear, fairly enforced policies that achieve coordination and cooperation — while respecting employee desires for empowerment and relative autonomy. Managers can begin by asking a few simple questions to determine what will work best in their organizations.

REPRINT 64304

Strategizing Across Organizations

Rafael Ramírez, Trudi Lang, Matthew Finch, Gail Carson, and Dale Fisher pp. 62-65

Key Insight: Tackling the big, systemic challenges confronting many meta-organizations will increasingly require their members to develop collective strategies that will benefit all stakeholders.

Top Takeaways: Developing strategies across meta-organizations is much more complex than setting strategy for a single company. The authors developed a new approach to collaborative strategy through their work with a global public health collective. The lessons they learned can help leaders in individual organizations work with partners to achieve both shared and individual strategic priorities.

REPRINT 64327

Why Innovation Depends on Intellectual Honesty

Jeff Dyer, Nathan Furr, Curtis Lefrandt, and Taeya Howell pp. 66-72

Key Insight: The most innovative teams over the long term are those that balance psychological safety with intellectual honesty.

Top Takeaways: Fostering psychological safety isn't enough to succeed at innovation if managers don't pay particular attention to creating the right conditions for healthy debate. If leaders can balance psychological safety with open, honest debate, they gain the benefits of both. The authors describe the factors that are most important to establishing this balance and outline what leaders can do to create a high-performance learning and innovation culture.

REPRINT 64303

Become a Better Problem Solver by Telling Better Stories

Arnaud Chevallier, Albrecht Enders, and Jean-Louis Barsoux pp. 73-78

Key Insight: When business leaders use a basic story framework to describe a problem, it helps people make sense of complex information and identify radically better solutions.

Top Takeaways: One of the biggest obstacles to effective decision-making is failure to define the problem well. Expressing a challenge in simple terms can make it easier to see whether a problem has been framed correctly in the first place. The authors suggest articulating a problem in story form, as a quest in which the key elements are a hero (protagonist), a dragon (obstacle), and a treasure (desired outcome). This kind of storytelling is useful for both thinking through ambiguous information and persuading others.

REPRINT 64306

Why Companies Should Help Every Employee Chart a Career Path

George Westerman and Abbie Lundberg pp. 79-84

Key Insight: Leaders must do much more to help employees see a future with their current company and a path to advance toward that future.

Top Takeaways: When it comes to providing career development support, most companies offer visibility into opportunities and paths, the means to learn and practice, and rich feedback and coaching — but only to high-potential employees. Integrating those types of resources and services into an expansive career development system that works across all levels of the workforce can help organizations cultivate needed skills and boost retention. Providing a broad development program requires a commitment to clarifying pathways for growth for all employees.

REPRINT 64305

Ask Sanyin:

How Can I Shape My Legacy as a Leader?

I feel that much of my leadership over the past few years has been crisis management. While I'm proud that we've achieved stability and growth in difficult times, that doesn't feel like a lasting legacy. How can I make my mark here?

THE NOTION OF BUILDING A legacy is daunting because we frame it in terms of what we leave behind: the final tally of our accomplishments netting out as the inheritance we pass to the next generation. From this perspective, the idea of legacy is inherently transactional and creates the illusion that building legacy is all about posting great results.

Of course, creating new sources of value or transforming operations for greater sustainability may be part of the legacy you'll be proud to leave behind. But this way of thinking about our legacies is also temporally disjunct. It makes our legacy appear far off, something that is manifest in the future. We forget that legacy is actually something we're continually building in the present. And we do it in small moments, such as those monthly breakfasts you have with new hires to seek their perspectives, showing that they matter. It can be in the stories that you share, highlighting not only those who closed the deal but celebrating those whose assists enabled the win. It can happen when you mentor a colleague who's experiencing a crisis of confidence.

Instead of focusing on grand accomplishments, think about legacy as your presence in your absence. That doesn't mean legacy is your memory living on — it's more dynamic. Cultivating legacy as presence in absence means asking: How do you want the person you are now — your values, your imagination — to continue to helpfully animate the organization after you've left? How do you shape the culture of your company? Why are you doing this in the first place — what purpose drives you?

This shift in mindset accomplishes two big things. First, it reminds you that you are building your legacy every day, with intention, rather than just looking back to assess your accomplishments.

"Think about your last day on your first day" is how Andrea Hyde, former CEO of Draper James and Burch Creative Capital, put it to me. When I am coaching executives new to their roles, I ask, "What do you want your board, your teammates, your family, and your clients to say about you on your last day here?" Visualizing that day and naming want you want to hear will shape your actions. If you want them to say you were considerate, you will likely seek to understand others' needs and perspectives. If you want to hear you were driven, you will likely be more diligent. If you want them to say you were level-headed, you will likely strive to be patient.

This mindset shift also helps you think about your legacy in terms of others: If it exists in our absence, it can never really be just about us. As part of my own work on legacy, I've been interviewing former players of retired Duke University men's basketball head coach Mike Krzyzewski. Coach K's big wins rarely come up. Instead, players reflect on his care for them as people. This suggests that our role as mentors can have a longer lasting impact than any big win or accomplishment recorded in the corporate history. And if we heed this, we'll remember that in the end, our enduring legacies are what other people make of what we have passed on to them. ■

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Hanane Kai

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